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CONTENTS

ORIGINAL ARTICLES—

ATYPICAL CLINICAL TYPES OF TUBERCULOSIS (CONCEALED). By *George Douglas Head, M. D.* Minneapolis, Minn. 79

THE TREATMENT OF MENORRHAGIA WITH RADIUM. By *Leda J. Stacy, M. D.*, Rochester, Minn. 88

SMALLPOX, BENIGN AND VIRULENT, IN MINNESOTA. By *A. J. Chesley, M. D.*, St. Paul, Minn. 92

THE TREATMENT OF EMPYEMA. By *F. J. Savage, M. D., Capt., M. C., U. S. A.*, St. Paul, Minn. 95

THE TECHNIQUE OF RADIUM APPLICATION. By *D. T. Quigley, M. D., F. A. C. S.*, Omaha, Neb. 97

(Continued on Advertising Page III.)

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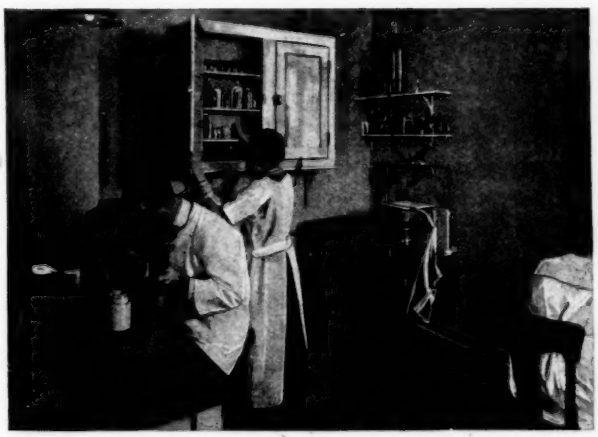

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Minnesota Medicine

Journal of the Minnesota State Medical Association

Vol. II MARCH, 1919 No. 3

ORIGINAL ARTICLES

ATYPICAL CLINICAL TYPES OF TUBERCULOSIS (CONCEALED).*

GEORGE DOUGLAS HEAD, M. D.,
Minneapolis, Minn.

The various clinical pictures describing tuberculous infections, recognizable by the usual methods employed, do not concern us in this discussion. I will ask you for the moment to fasten your attention upon that class of patients, of which there must be many, who harbor tuberculous lesions either in the lungs, pleura, peritoneum, lymph glands or elsewhere, so concealed as to require a specific test, namely, the tuberculin test, to establish the diagnosis beyond a reasonable doubt.

The fact is well established that a considerable percentage of the human race, apparently in health, show evidence at death, of tuberculosis either past or present. Mendelsohn in 826 deaths from accident and violence found 20 per cent of the individuals with healed, latent or active tuberculosis. I say apparently in health, for we have no accurate data, prior to death, recording the complaints or states of health of this class of persons. It does not necessarily follow because people are about and at work that they feel well and are free of complaints. A very pertinent question to ask and try to answer centers about this group of persons who at death, show post mortem evidence of tuberculosis, healed, latent or active.

Can the tubercle bacillus develop its lesions in the body and fail to produce abnormal sensations, reduced states of nutrition or evidence of chronic toxaemia of which the individual is unconscious? In other words, can tuberculous people go through life free from complaints and entirely unconscious of the slow fires of tuberculosis burning within? If not, what are their complaints? Lack of this information has hindered the development of our knowledge of the symptomatology of tuberculosis. An obstacle of far more importance is the difficulty surrounding an accurate diagnosis of tuberculosis in its quiescent forms.

Pathological studies alone, without the use of a specific test (tuberculin test), cannot answer this question for us. Autopsies cannot be made upon persons while they are living. If they appear healthy and have no complaints we cannot know by autopsy whether they are free of tuberculosis. If they complain of symptoms of one kind or another and our examination is negative for tuberculosis we cannot know, unless we use a specific test, whether the individual is free of tuberculosis, since a pathological examination during life is impossible. If, at death, the individual shows evidence of tuberculosis, healed, latent or active, we cannot know whether he had tuberculosis at the time he was complaining of his symptoms, and if he has never consulted a physician and dies of accident or injury we have no accurate record of his life history so far as his complaints are concerned. It seems quite apparent, therefore, that other sources of investigation, outside of pathological studies, must be called upon to give us accurate information relative to this question.

Some light can doubtless be thrown upon it by a study of the complaints and states of nutrition in children, since in this class of patients the Von Pirquet test is a fairly accurate index of the presence of an active tuberculous lesion, but here the clinician is dealing with a class of patients who do not observe accurately

*Presented at the Annual Meeting of the Minnesota State Medical Association at Duluth, August 28, 29 and 30th, 1918.

nor can they describe well abnormal sensations of one kind or another. Life insurance examination records have furnished some valuable data but here again too little attention has been paid to a careful inquiry into the complaints of persons who apparently in health have presented themselves for life insurance examinations and are found to be tuberculous. It is notorious that such persons attempt to conceal from the examiner all complaints and other evidence of an abnormal state of body or mind. Then, too, individuals are notoriously forgetful of their aches and pains so soon as they are past.

Not long ago the writer examined a young man of twenty years of age who had a few weeks prior thereto, applied for life insurance, presuming himself to be a normal individual. The examiner, however, discovered evidence of a tuberculous infection in the apex of the right lung and the risk was rejected. This patient presented himself for a confirmation or denial of the diagnosis and of course had no personal interest in concealing in any way his symptoms or complaints. The examination which I made confirmed the diagnosis of pulmonary tuberculosis in the upper part of the right lung. I then inquired carefully into the life history of this patient but was not able to elicit from him a single symptom or complaint suggestive of an abnormal state of body or mind. He persistently stated that he felt absolutely well. Only occasionally, however, has one an opportunity to examine a case of this sort which furnishes evidence of undoubted value.

It must be admitted also, that individuals differ markedly in their ability to interpret abnormal feelings. This is well illustrated by the variation shown by human beings to the common sensation of pain. The prick of a pin on the arm of two individuals may elicit a very different response. One person will jump and cry out and clutch the arm, while the other at the same point with the same force will remain quite passive and complain of no real sensation of pain. Even so serious a disease as cancer of the stomach will in some individuals fail to give sensory disturbances until the disease is far advanced and very great weakness is apparent. On the other hand, the very first abnormal sensation that something is wrong and out of tune in the body, will set other individuals on edge, so to speak, and make them very receptive and conscious of all abnormal feelings which a disease process may bring about. It is therefore difficult to know in apparently healthy persons dying of accident, in whom tuberculosis, either healed, latent or active, is present, whether in reality these persons had complaints which because of their stoical nerve construction, they fail to pay attention to and complain about, or whether these persons in reality had no abnormal feelings and were well persons in the true meaning of the term.

From this and other experiences, therefore, it must be admitted, for all practical clinical purposes, that tubercle bacilli may lodge in the human body and produce lesions without causing abnormal sensations which will attract the attention of the host. I firmly believe, however, from a considerable experience that these cases are rare and that could all persons infected be kept under skilled observation, the disease would make itself manifest in the vast majority of persons in sensations sufficiently pronounced to call their attention to the fact.

The difficulties encountered in attempting to interpret with accuracy, incipient and very early tuberculous lesions by the older methods of diagnosis employed, namely, the physical and other objective signs, a study of pulse rates and temperature records, etc., it seems unnecessary for me to discuss. Of course in this connection the care with which the examination is made and the skill of the examiner counts for a great deal in bringing to light these hidden foci of infection, but from a long experience with these older methods I feel quite sure that a large percentage of the cases which I have in mind would be entirely overlooked or wrongly interpreted if these methods were to be depended upon. They certainly cannot be relied upon in attempting to diagnose with any degree of accuracy the class of cases which I wish to present, namely, those tuberculous infections which I have called "concealed," lesions so mild in degree as to escape the detection by the usual methods employed. For their identification one must rely upon a speeific test which is at his command in Koch's Old Tuberculin.

An adult presents himself complaining of slight cough, ill-defined pains in the chest or

elsewhere, loss in weight, indigestion, headaches, eyeache, circulatory disturbances in cold hands and feet, insomnia, mental depression, crying spells, backache, marked weakness, huskiness of the voice, clearing of the throat, dizziness, fainting spells, or shows a tendency to play out under the ordinary demands of life which we are accustomed to describe as nervous and physical exhaustion, or a train of ill-defined symptoms out of harmony with a symptom complex expressive of any disease with which we are familiar. It is this group of cases which many times cannot be recognized with certainty without the use of the specific test. Even in the hands of the most expert, if tuberculosis is suspected, only a doubtful diagnosis or one with a question mark after it can be made. Such a diagnosis cannot be utilized in scientific reasoning and must be substantiated by a specific test in order that definite conclusions can be reached. In most instances the clinician is not sure enough of his ground to state his conclusions to the patient and give the individual the advantage which is almost always derived from the intelligent management of the disease. That these poor sufferers should go through life tossed from one clinician to another with the diagnosis of nervous exhaustion or neurasthenia, neuralgia, psychasthenia or Glenard's Disease, operated on for one form of intra-abdominal condition or another, running the whole gamut from nephropexy to operative procedures upon the appendix, gall bladder, stomach, intestines and other organs, is a reproach upon the diagnostic ability of our profession.

I wish to be clearly understood at this point. The writer is not contending for the conception that all persons exhibiting the symptoms of sub-nourished states or abnormal sensations and presenting no clinical evidence of disease, are tuberculous. As you all know there are very definite groups of cases of this symptom type which are met with in syphilis, in cardiac disease, both myocardial and endocardial, in nephritis, in gastric ulcer, in exophthalmic goitre, in chronic toxaemias from foci of septic infections in the tonsils, sinuses, teeth and elsewhere. These must not be overlooked nor must they be confused with the tuberculous group. However, so firmly fixed have become my ideas upon this phase of the subject that I now feel assured that every person giving a symptom complex, to account for which no definite causal factor can be found, should be given a subcutaneous tuberculin test to determinte whether or not they harbor a tuberculous lesion. The confusing clinical picture presented by these slow, low-grade tuberculous toxaemias cannot be otherwise interpreted.

Now it is to the symptomatology of this group of cases which I wish to direct your attention; persons seen clinically, complaining of symptoms to explain which no satisfactory explanation could be given until they were found to be tuberculous by a subcutaneous injection of tuberculin. Many of these patients presented no evidence of organic disease after a searching examination. Others presented doubtful signs in the pleura, lungs, lymph glands, peritoneum or elsewhere, suggestive of, but not distinctive for, tuberculosis, and the test was given to establish the diagnosis beyond question. In a few of the cases the diagnosis of tuberculosis was fairly certain but some features of the case being out of harmony with this diagnosis the test was given to remove all doubt.

In order to present to you some concrete ideas, because I know how easy it is to roam about in a realm of general discussion, I have selected out of my private records, a series of 163 cases in whom, for one reason or another, a subcutaneous diagnostic dose of tuberculin was given and all of whom reacted with a distinctive temperature rise and other signs indicative of a positive reaction. All of the cases were carefully studied prior to the use of the test for evidence of latent or active syphilis, cardiac disease, either endo- or myo-cardial, exophthalmic goitre, gastric ulcer, septic infections in the tonsils, teeth, sinuses or elsewhere. The test was given to clear up the diagnosis. Undoubtedly some errors have crept in, some patients have more than one disease, but the percentage must have been small since the majority of the patients have been under observation for years, and such errors, if they had occurred, would have been discovered in later examinations. In a small percentage of the cases there were associated pathological conditions of one form or another but for the most part this group of cases, proven to be free of all disease other than tuberculosis by the sub-

cutaneous tuberculin test, supplies a very fruitful field for the study of the symptomatology of this type of tuberculosis, the form which I have alluded to in my former papers as the "concealed" type of the disease.

Inasmuch as these patients had all consulted a physician, they were complaining of symptoms of one kind or another. While of course, in many of the cases there was an overlapping in the symptomatology so that no clear-cut grouping could be made, I have endeavored to classify the symptoms according to the most important and prominent complaints which brought the patient for examination. This was rather easy to do since in the regular routine history taking in my work the chief and important complaint of the patient and the one for which he seeks advice is first stated in taking the history and only direct and leading questions are asked after the patient has been permitted to tell his story and describe his symptoms.

By far the largest group of cases fall into what I have called the "cough and cold" group. These comprise 34 per cent. The cough, as a rule, is just enough to attract the patient's attention. It is frequently described as nothing more than a clearing of the throat. There usually is no expectoration. If the patient becomes tired or exhausted or undertakes physical exertion it will be aggravated. It often persists for years. Some of the patients complain of having had it from childhood. In many it recurs after years of quiescence. It is often described as a little nervous cough. Physicians have reassured many of these patients repeatedly that nothing was wrong in the chest. Some are thick-chested with heavy shoulders, muscular, well-developed limbs and have good expansion. I have one patient now who weighs over 200 pounds. The majority, however, are thin, long-chested individuals with high cheek bones and slender limbs. A few of these patients complain of dyspnoeic attacks resembling mild types of bronchial asthma. Most of them complain of catching cold easily and when they take cold, the cough is aggravated and some expectoration may continue for a time to finally cease, and then the so-called little nervous cough continues. Some of these cases will have had a sudden, small or even large, hemorrhage from the lungs when in apparently good health. Well defined physical signs indicative of the presence of a tuberculous infection were absent. Sometimes a careful, searching examination will reveal a friction rub in some part of the chest or a few fine crackles at an apex which do not persist and cannot be interpreted with certainty as evidence of a tuberculous process. These patients may, or may not, complain of any chest pains. The cough and the tendency to taking cold are the important and leading complaints for which they have consulted the physician. Fluoroscopic and stereoscopic X-ray studies of the chest give help in the interpretation of some of these cases, but because X-ray studies so often fail to differentiate between the healed and active lesions I have learned to rely more upon the evidence furnished by tuberculin given subcutaneously. Many of them show the evidence of nervous and physical exhaustion which I shall describe in a later group.

The second group I have classed as the "abdominal distress" group. Twenty per cent of the whole number fall in this category. These patients present themselves complaining of either gastric symptoms, belching of gas, heartburn, etc., or ill-defined pains in the upper, or at times in other parts of the abdomen. Their abdominal distress is of a very irregular type. It lacks the regular time element usually associated with gastric or duodenal ulcer, although some of the cases are difficult to differentiate from this condition. There is no fixed point of tenderness. Fermentative disturbances with belching of gas are frequent. Heavy, rich foods, pastries etc., cause the most trouble. Taking of a laxative usually gives prompt relief. The gastric findings after an Ewald meal are usually about normal. Hyper- or sub-acidity may exist. In some of the cases an ill-defined nausea is present and is occasionally persistent. These patients lose slowly but persistently in weight. They take less food than the body requires to maintain weight. If they eat when overly tired or under nervous excitement the gastric symptoms are worse. There is a lack of objective findings. In some of the cases there is a general ill-defined abdominal tenderness without other objective findings in the abdomen. A small percentage of these undoubtedly have tuberculous lesions

of the appendix, omentum, mesentery or other abdominal or pelvic organs as an occasional abdominal section will show. The chief characteristic of this group of cases is the ill-defined nature of the abdominal complaint not fitting in well with a diagnosis as applied to disease of any one of the organs to which one ordinarily looks for the production of abdominal symptoms, namely, the appendix, gall-bladder, pancreas, stomach or duodenum.

These cases form a very important group and while many symptoms indicating nervous and physical exhaustion are present in these individuals, the attention of the patient and the physician is usually focused upon the abdomen and unless a very careful study of the case is made, surgery is too often resorted to in the attempt to clear up the diagnosis and apply what is thought to be rational therapeutics. It is not well enough understood by the profession that ill-defined distress in the abdomen, especially in a young person, always calls for a very thorough examination for the presence of a tuberculous lesion, outside of, as well as within the abdomen. This has been dwelt upon again and again by the older writers on the subject but is still a fact too often forgotten by clinicians. Just what percentage of these persons actually harbor a tuberculous lesion in the abdominal organs cannot be answered, since in applying the tuberculin test in these individuals one often has no accurate knowledge of the location of the disease. One only knows that tuberculosis exists and in an active form. My own belief is, that a large percentage of these patients in this class are suffering from malsecretions or circulatory disturbances in the stomach caused by a chronic tuberculous toxaemia, the lesion being located in the lungs, mediastinal lymph glands or pleurae. No doubt the poor state of nutrition which we find in many may serve as a causal factor for the symptoms of which they complain.

In some of these cases the diagnosis of mucous colitis is made because of the appearance of mucus in the stools. I have not been able to demonstrate in any of these, tubercle bacilli in the stools or lesions in the bowel, and while it is possible that some of the cases may have tuberculous lesions in the intestines or appendix which may explain the presence of the mucus, I am inclined to think that the origin of the mucus is from the stomach. The tuberculin reaction in this group of cases, or in any of the groups here described, does not aggravate the symptoms but on the other hand the patients do wonderfully well after a well marked reaction to the tuberculin.

About 15 per cent of the cases fall easily into what might be called the "chest pain" group. This is a very important type of tuberculous infection. You are all familiar with the large percentage of healed and latent forms of tuberculous pleuritis which are encountered at autopsy. Have you ever stopped to think what a large number of persons there are who go about through life carrying these tuberculous infections of the pleura, many of them never consulting a physician, or if they do, an all too careless examination fails to reveal evidence of pleuritis, and the diagnosis of neurasthenia, intercostal neuralgia, intercostal neuritis, intercostal myalgia or myositis, etc., has been made?

The chest pains are usually of long duration, extending over as many as ten or fifteen or more years. In fact, they are characterized by their persistence. They keep recurring in winter and spring when the vital resistance of the patient is low. The locations of the pain are very varied and often are referred far from the seat of the lesion. Some of them are referred to the mid-sternum, a considerable group into the scapula or into the upper or lower back or directly to the spine itself or to the right or left shoulder, down the arm, into the neck or into the upper abdomen. Some of those referred into the lower abdomen are undoubtedly from the diaphragmatic pleura or the lateral pleura close to the diaphragm. They are notorious also for their mobility. At one visit the patient may complain of pain in one side of the chest and at the next visit in the other side. Sometimes at the base and again in the upper part of the chest. Many times a dry pleural friction rub can be heard if one is careful to examine all parts of the pleurae, tucked away in some unsuspected area, either at the apex or base. In many no friction rub can be heard, or it may be present at one examination and absent at another. When present it comes out best on deep inspiration and if one is not careful it is easily overlooked. The fine friction rub is often lim-

ited in extent and may not cover an area larger than a dollar or the palm of one's hand. Cough or deep breathing may or may not aggravate it. Exercise, if violent or prolonged, will often increase the chest pain. Many of the dull backaches, high up, in both men and women, of long standing, which come and go, are due to these dry forms of pleuritis with referred pains into the spine. Many of the ill-defined neckaches which so-called neurotic women complain of are undoubtedly referred pains from forms of tuberculous pleurisy localized in small patches in the upper part of the chest, oftentimes in the extreme apex.

Only within the last month I have had under observation a patient with a basal pleuritis, who, for the last fifteen years has been complaining of pain in the lower chest and upper abdomen. The abdomen of this patient has been opened four times with the diagnosis of some intra-abdominal lesion but without relief, the same old pain persisting. I have not the slightest doubt but that all of this woman's pain is a reflected pain from a tuberculous pleurisy involving the pleurae on both sides and the diaphragm as well. I cannot lay too great emphasis upon this symptom type of concealed tuberculosis. Not all of these pleurisies are tuberculous in origin. The streptococcus probably plays a role in the etiology of a considerable percentage of them. I have quite a number that have not reacted to tuberculin.

In about 18 per cent of the cases the chief symptoms complained of by the patients were those of physical and nervous exhaustion. This symptomatic type I have emphasized in a former paper presented before the American Medical Association in June, 1914. The individuals of this group present a confused syndrome of symptoms out of harmony with any well defined clinical picture. So varied are their complaints that the clinician is baffled in his attempt to interpret them in the light of the well established symptomatic pictures with which he is familiar. These patients feel tired all of the time. The condition might well be called "The Tired Sickness." This feeling of exhaustion is complained of more in the morning and early part of the day. Most of these patients cannot get enough sleep. A small percentage of them have insomnia. Every added exertion, slight worry, increase of responsibility, sickness in the family, entertainment of guests and unusual demands of all sorts upon their strength only add to this feeling of exhaustion. These are the patients that give the history of nervous breakdowns beginning oftentimes in childhood resulting in the patient being taken out of school for rest only to return and have the experience repeated oftentimes again and again. Many of them, in adult life, while in college, break down and finally are compelled to give up their college training. Teachers and stenographers, bookkeepers and persons occupied in indoor work, under high strain, make up a large part of this group. These individuals spur themselves up to do their assigned work or tasks only to lapse into states of exhaustion and must rest to recuperate their physical and nervous reserve. They suffer much from backache, indigestion, headache, constipation, cold hands and feet, states of mental depression, crying spells, neckache, exhaustion under mental effort, eyeache, dysmenorrhoea, insomnia, dizzy or fainting spells and air hunger. They are chronic complainers and real sufferers. Many of these cases are in children. Parents will bring the child stating that they do not know what is the matter but the boy or girl seems tired all the time. They lack strength and endurance, play out easily at school and if they are put to work they lack physical stamina and often lose their position, not because they are not bright and active and willing, but because their vital force is sapped by a tuberculous toxaemia. Many of these patients are young women who have been operated upon for pelvic displacements, ovarian disease, chronic appendicitis, ulcer of the stomach, chronic constipation and abdominal adhesions. They progressively lose weight and live in a state of under-nutrition. It is possible that many of their symptoms are due to a sub-nourished state. The loss in weight is usually slow and progressive. They feel best when they weigh most. Some of them have a slight clearing of the throat or a little cough when tired or exhausted. Spells of weakness or faintness are frequently complained of especially when the stomach is empty. Many of them give a history of exposure to tuberculosis in childhood, usually a father or mother having the disease.

In connection with this group I wish to speak of a peculiar type of case, the chief symptom of which is air hunger or the tendency of the patient to take deep breaths. These patients are usually referred as cases of hysteria because no rational explanation can be found for the tendency which the patient has to take deep breaths and get more air into the lungs. They present a very striking picture. Every third or fourth breath the patient takes a very deep, full breath, using all excessory muscles to fill the lungs with air. Searching examinations of these patients have failed to reveal any organic disease outside of the presence of a tuberculous lesion as revealed by a subcutaneous tuberculin test. The majority of the patients in the exhaustion group possess a high natural resistance, otherwise there would be less so-called neurasthenia and more tuberculosis. Only a small percentage of them present physical signs of an active tuberculosis and then only after long years of suffering from the symptoms of physical and nervous exhaustion. Many of these women are weak, nervous creatures going from one clinician to another, who, on account of the negative physical findings make a diagnosis of neurasthenia, nervous exhaustion, psychasthenia, etc. A careful study of the case may reveal abnormal physical findings usually too ill-defined to correctly interpret the disease. The diagnosis is made by subjecting the patient to the specific test. These cases are common and they should be diagnosed and treated as tuberculosis rather than some form of nervous exhaustion.

A small percentage, namely, 5 per cent, fall into a group which I have designated the "mal-nutrition" group. The chief and important complaint is a slow, gradual and progressive loss in weight with usually an associated loss in strength without any assignable cause so far as the patient is able to determine. Most of these patients are usually from fifteen to twenty-five pounds under weight. They have no pain, no cough. Many of them complain of gastric disturbances of one kind or another, which, however, do not dominate the picture and are usually only elicited by questioning. A certain percentage of this group are people of large frame and fairly broad chests and rather stock build. The pulse is not particularly fast and the symptoms of malnutrition and progressive loss in weight dominate the picture. Physical examination of these patients is usually negative for organic disease and the diagnosis can only be made by the application of the subcutaneous tuberculin test.

Another small group of cases, 5 per cent, complain of a persistent pain in the back, low down over the lumbar region, either on both sides or upon the right or left side. Ill-defined tenderness and some hyperaesthesia of the skin is occasionally complained of in the region of the pain. The pain occasionally radiates down along the course of the ureter and into the bladder. Frequent micturition is often an associated symptom. Some of the cases have nocturnal urination. Severe attacks of pain resembling mild renal colic are complained of by some of the patients. The urine is, for the most part, negative except that a few pus cells or occasionally blood cells may be found. Tubercle bacilli may be found in the urine. In this group of cases the pain in the lower back is probably an expression of an early renal tuberculosis, either unilateral or bilateral. Some of these patients have later developed tubercle bacilli in the urine with pyuria and haematuria.

I have endeavored to study in a symptomatic way a series of 163 cases of tuberculous infections of the concealed form. In the study of the complaints described by these patients we have the advantage, through the tuberculin test, of the accurate knowledge which it furnishes concerning the existence of a known tuberculous lesion. There is no guesswork, because I do not think anyone would be foolish enough to deny that a positive reaction to a subcutaneous test means an active tuberculous lesion in the individual giving such a reaction. We have also the advantage of studying this group of patients at a time in the course of the disease when it was not possible to establish the diagnosis of tuberculosis by means other than by the use of the specific test.

I feel, therefore, that possibly a broader viewpoint of the whole symptomatology of this extremely common infection has been presented. While our knowledge of heretofore described symptoms of tuberculosis has not in any way been broadened, it has been pressed home upon the writer, and I hope upon those who have listened to the reading of the paper, that

the interpretation of a large number of the ill-defined aches and pains and abnormal states of nutrition which present themselves to the clinician in such baffling variety, cannot be accurately made and the best interests of the patients subserved unless the clinician is willing to apply the knowledge which is furnished him by a test which is as specific for tuberculosis as the Wassermann test is for lues.

A normal individual, sound of body, lives out his life unconscious of the working of his internal machinery. Complaints or abnormal sensations are usually indicative of disease processes of one kind or another provided our knowledge is sufficiently complete to detect the presence of the lesion. It may not always be possible for us to know the special organ in which the disease is located, indeed it may not be necessary for us to know this. In most of these individuals forming the subject of this paper it was sufficient to know that an infection with the tubercle bacillus existed in order to map out a proper course of living, not only with relation to the work done and the food eaten, but also the hours of recreation and of sleep. Most of these persons can be brought back to a state of normal health by judicious management.

Until the profession has secured more specific medication for the healing of this widespread and very common infection, the valuable help which the clinician can give to the patient rests largely in the recognition of the disease process with certainty, so soon as the patient begins to have complaints and presents himself for examination. These patients ask for the bread of health, let us not in our diagnostic carelessness give them the stone of chronic invalidism.

DISCUSSION

DR. E. T. F. RICHARDS, St. Paul: I was very much interested in Dr. Head's excellent paper. The great war has brought to light a tremendous number of active cases of tuberculosis that were admitted into the army without being spotted. For this there is no excuse. It probably means hasty and indifferent examinations. On the other hand, there have been a very large number of cases with pulmonary tuberculosis which, when examined for the army, were latent—entirely without physical signs—but which under the strain of trench warfare developed into active, progressive cases. It is very doubtful if any of these latter cases could have been weeded out on their first examination even with the most searching care. This serves [illegible] in great need of a diagnostic method which will enable us to detect the latent case, the case which is negative on careful physical examination and for the most part gives a negative detailed history. The careful interpretation of correctly made stereoscopic X-ray plates, as pointed out by Dr. F. S. Bissell and myself a few years ago in the American Journal of Roentgenology, together with the proper use of, and correct interpretation of, the subcutaneous tuberculin test, as Dr. Head has so repeatedly emphasized, will undoubtedly enable us to detect a very large number of the so-called latent cases which now go unrecognized. Time, careful attention to detail, correct technic, correct interpretation, and experience, are the elements which mean everything in the detection of the concealed type of tuberculosis.

We have seen in this morning's session from the papers of Dr. Tuohy and myself that the war has forced upon us a new term, that of "neuro-circulatory asthenia." This signifies that we cannot be entirely dependent upon infection for the cause of a varied or "neurasthenic" symptomatology. It is quite true that even in a considerable number of neuro-circulatory asthenics, foci of infection can be demonstrated, and upon eradication of these, improvement perceptibly follows. It is quite possible that post-mortem examinations in asthenics, as in others, will show healed tuberculous foci of the lungs or glands. We would, however, have no proof for attributing all the symptomatology exhibited to such foci. In other words, although we can place a great many individuals who show a varied symptomatology (in which fatigue is the most dominant) into one group where the underlying cause of their ill health is a focus of infection, whether that be a tuberculous concealed focus as Dr. Head has described or a hidden infection around the root of a tooth demonstrated only by the X-ray, yet we must also accept another large group, typified by the neuro-circulatory, which is covered only by the term "asthenia," the underlying factors in which being most probably congenital deficiencies.

DR. C. L. GREENE, St. Paul: I think, Mr. Chairman, that Dr. Head's paper is one of extreme value. He and I have always disagreed as to the value of the tuberculin reaction, so we need not discuss that.

But it seems to me that the moment that one gets into his mind the conception of congenital asthenia, you find the foundation of pretty much all we have been talking about today.

We have to go back to the original description of that physical fact as given I think in 1907—I have forgotten the exact date,—by Stillwell.

Among other things, without attempting to describe it anew, he laid, as I recall, great stress upon the fact that those of the congenitally asthenic type—and they are also of the visceroptotic type, the low lying stomach heart and so on—were peculiarly liable to infection and peculiarly susceptible to tuberculous infection. There can be no doubt about that. It is the most fertile soil for the implantation of the tubercle bacillus.

During the past eight or nine years it has been our custom, in my own office, to X-ray all patients as a part of the routine examination, and in line with what Dr. Richards has just said—and he knows it from his own

experience when in my office—we found in that type of cases an astonishingly large percentage of tuberculous lesions, although that percentage would be changed very much in the office of a man dealing with tuberculous cases to a larger extent than I do. Any man specializing in tuberculous cases and getting a good many active cases would find much more of that type.

It has been, I think, sufficiently established in the last few years especially, that this congenitally asthenic type is seen in families as the primary and original type, but such children acquire tuberculous infection much more easily than others. I think Dr. Head has done us a great favor in laying stress upon the symptomatology of the group. I am not, of course, willing to say that I think those symptom groups are peculiarly tuberculous, and I do not understand him to say that, because as a matter fact they occur in many conditions, and certain of them, especially the fatigue condition which he speaks of, are very common in soldier's heart, which, as I regard it, is best described by a term used in 1904 by Hartshorne. He called it "heart exhaustion," because these soldiers' hearts are not irritable hearts at all, but they are hearts which do not stand exertion well, in which the reserve strength is not good.

There was one item, if I may be permitted to speak of it, to which we have all paid too little attention in the discussion, and that is the question of nutrition. In the case of many of these small and poor hearts, or exhausted hearts or insufficient hearts of that type, in all the congenitally asthenic individuals, the state of nutrition is paramount. They are peculiarly unstable. They lose weight readily.Sometimes even under slight infection or under s ight overstrain and so on; and the first thing I have in mind in my cases is to raise the nutritional level, and in respect to the heart, to avoid in every possible way giving the patient the impression that he has heart trouble. I was glad to hear that emphasized today. Lewis and McKenzie, and all who are dealing with soldiers' hearts emphasize the fact that you should not let the individual have the idea that he has heart trouble. It is not necessary. It can be put to him in other ways.

I will say just one thing about neurasthenia. I disagree with Dr. Plummer, perhaps not as much as might appear, because as I understand it he merely wants to retain the term. But when we use the term neurasthenia, whatever it may be, I think that that is the weak point about neurasthenia. It has never been a proper definition, and every month that passes and every year that goes by robs it of its most cherished use. They are going one by one. This congenitally asthenic type is the type which furnishes the greater number of neurasthenic cases.

I have said for many years, and I believe today that the existence of neurasthenia as a medical entity is a distinct damage to the profession of medicine, because it constitutes a standing temptation to make the easiest possible diagnosis in a doubtful case, and it pleased me very much to read in the writings of one of our most advanced neurologists not long ago, practically the same statement that I make to you at this time.

DR. JOHN J. McGROARTY, Easton: Tuberculosis in some form or other is one of the problems which confronts every physician and surgeon and no physician can do justice to his patients or to himself, unless he is able to diagnose tuberculosis in its early stages.

There is urgent need for the medical profession at the present time to formulate diagnostic methods, whereby the early diagnosis of tuberculosis can be made.

The public are awakening to the need of the early diagnosis of tuberculosis, and rightly so, because the patient's health and often his life depends on the advice given by the physician at this time.

I wish to make this statement that during the past ten years, we have been finding out more definitely that many of the conditions which we called asthenia and neurasthenia have, with the advancement of medical science, been shown to be due to some particular infection.

If we wish to eliminate a great many cases of tuberculosis or rather, if we wish to have a smaller number of cases of tuberculosis, we must make our diagnosis earlier.

It is appalling to see the number of cases right here in Minnesota who die every year with tuberculosis.

If we wait until they have all the symptoms, for example, dullness on percussion over one or more lobes, bronchial breathing over one or more lobes, breathing faint, suppressed, or absent over any lobe or lung, crackling rales present and with the sputum positive, etc., before we make a diagnosis of tuberculosis, I really believe we are going to lose a great many cases.

We have a certain number of cases—a great many in fact—where we can examine the lungs both physically and by means of the X-ray and find absolutely nothing.

The point I wish to lay particular stress on is this, that whenever you have a patient who gives a history of a gradual general deterioration, going down little by little and you can find positively no lesion in the body without any temperature or with moderate fever, you should bear constantly in mind, the possibility of tuberculosis and the first question you should ask yourself is, is this the initial stage of a tuberculosis?

We know that in most all cases that this gradual deterioration of the patient takes place long before the local condition manifests itself either in the lungs, kidneys or any other part of the body; or in other words, the primary manifestation of all tuberculous lesions is usually the constitutional condition of the patient, preceding by many months the local manifestations. This is so uniform and so common an occurence and yet it is so erroneously diagnosed as asthenia, neurasthenia, biliousness, etc., for months and months before the local lesion in the kidney is recognized; before the local lesion in the bladder is recognized; before the local lesion in the epididymis is recognized; before the local lesion in a bone or joint is recognized; before the local lesion in the peritoneum, or before the local lesion in the lung is recognized.

The early diagnosis of pulmonary tuberculosis, or rather lesions of tuberculosis, is no easy task; it takes time (sometimes months) and thoroughness to make a diagnosis.

DR. GEORGE D. HEAD (closing the discussion:) I appreciate Dr. Plummer's opinion about the matter of retaining the term "neurasthenia."

The difficulty with this at the present time is our entire ignorance of what we mean by neurasthenia, our entire ignorance of the pathology that lies behind it; and if we are to retain the term at all, we ought to see it with some notion of what we mean pathologically by its use.

I do not doubt at all but that many cases, Doctor, which you might call neurasthenia or congenital asthenia, are really congenital or acquired lues, and that there are spirochetes somewhere in the body, either in the heart muscle, liver, brain or in some of the other organs. I have no doubt at all from my own conception of the condition, that many cases which you might classify as neurasthenia, are really cases of chronic tuberculosis, the toxin being absorbed from a small latent focus somewhere in the body, and being distributed into the blood stream under severe exertion or unusual strain or the approach of certain periods of life, when the individual has been put under special strain,

I have no objection to the use of the term neurasthenia, but the use as Dr. Greene says of a conception, a clinical conception, of neurasthenia aside from an etiology or a pathology, is something, gentlemen, you are talking about which I am entirely ignorant of.

This does not apply only to tuberculosis. We have the neurasthenic type in cardiac disease, we have it in syphilis, we have it in gastric ulcer, in duodenal ulcer, we have the picture in a variety of pathological conditions; but for heaven's sake let us not dignify that as a disease, and go on as a profession diagnosing neurasthenia, neurasthenia, neurasthenia, until my heart aches, when I hear the use of that term.

DR. TUOHY: Cardiac neurasthenia?

DR. HEAD: Possibly so, but let us remember that tuberculosis is like syphilis. It is very common. When we see people breaking down, young people particularly, and children,—and in answering Dr. Richards' question I should say that the general consensus of opinion now, Doctor, is that the vast majority of persons are infected in childhood. Any man who deals with tuberculosis knows that in the families of these individuals he can trace right along in the children the histories of infection from the mother or the father or brother or sister, away back 10 or 15 years before they have developed the active lesions. Why, it is a regular thing in my work in the office,—I would say in 90 per cent of our cases of persons who show active tuberculosis, we get the history of infection back in childhood. I do not believe that is any longer a mooted question, Dr. Richards, and I do not believe that you do, but I think you asked the question to bring the point out.

But the point I want to make is this, and I do not want to be misunderstood by Dr. Plummer or anyone else, but I do disagree with him. Let us drop this term "neurasthenia," as a clinical entity, so far as diagnosis is concerned. We can call it a neurasthenic state or a state of exhaustion, not a disease entity, not a diagnosis. Because if you have a boy or girl or young man or young woman, with a concealed tuberculosis lesion, when that individual comes to you with the complaints which I have emphasized today, do not turn them away and say, "Oh, you are neurasthenic. You are congenitally weak; we cannot do anything for you. You will always be that way." If that person harbors latent tuberculosis, treat them for their tuberculosis. If they harbor congenital lues, treat them for their lues; if they have a latent ulcer, cure it; get them well. I am sure you will find that this method of dealing with so-called neurasthenia in the practice of your profession will give you a lot of satisfaction.

THE TREATMENT OF MENORRHAGIA WITH RADIUM.*

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Menorrhagia occurs more often at the beginning and at the ending of the menstrual function. It is seldom that the profuse menstrutation of the first decade of menstruation is due to a demonstrable lesion, but rather to defective uterine musculature or, more probably, to a disturbance in the balance of the internal secretions. The inter-relationship of the functioning of the glands of internal secretion opens up a most interesting field for study. The secretions of the adrenal medulla and the thyroid have been studied quantitatively because the active constituents of these two glands have been separated as pure chemical compounds.[6] That the other ductless glands also furnish secretions which contain physiologically active substances is undoubtedly true, but as yet these secretions have not been isolated in a form in which they can be studied quantitatively and their exact action determined.

The menorrhagias of the second and third decades may occur, with no gross lesions apparent, in cases of polypoid endometritis and sometimes as a result of passive congestion in a retroverted or a prolapsed uterus, or, occasionally, as a result of chronic pelvic infection; but the most frequent cause of hemorrhage at this period is the presence of a uterine myoma, of polypi, or of carcinoma.

Hypertrophic endometritis is not now considered a definite pathologic condition of the

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endometrium, but a normal physiologic congestion in the menstrual cycle.[3]

The management of the profuse menstruation in those cases in which no gross lesion is found, or in cases in which a small myoma exists, has not in the past, been especially satisfactory. In some instances, young persons respond to glandular medication, such as ovarian and thyroid extract, and pituitrin. A few patients have improved after blood transfusion, and following the use of horse-serum, but the effect, as a rule, has been that of temporary relief only. Curettement is seldom effective and should be tried only after medical treatment has failed. This type of menorrhagia, in older persons, has usually been treated by local medication and repeated curettements.

In many of the cases in which a small myoma is found, the conservative surgeon hesitates to submit the patient to so radical a procedure as a hysterectomy, or even to a myomectomy.

The work of Wickham showed that the beta and gamma rays of radium produced an endarteritis, which goes on to the obliteration of the blood vessels. This fact led Abbe, in 1905, to make the first application of radium within the uterine cavity to control bleeding in a case of fibroids in a patient 49 years of age. The effect of the gamma rays on the ovarian tissue is still a contested point. Horowitz has shown, experimentally, that in two to three days following exposure to the X-ray and to the gamma rays of radium, the nuclei of the mature graafian follicles break down, and in ten days the follicle is almost entirely destroyed, thus preventing the development in the corpus luteum. Kelly and Burnam consider that the decrease in the size of the fibroids and the cessation of the hemorrhage are due to the anemia following the obliteration of the blood vessels. They cite cases in which fibroids have appeared after the menopause, or after the removal of the ovaries. They also report two cases in their series in which the fibroids disappeared without cessation of menstruation.

Radium was first used in the Mayo Clinic about three years ago (1915) in the treatment of menorrhagia of the menopause, in cases which presented no gross pelvic lesion, and in those presenting a fibroid but with contra-indication to operation. Since then the types of cases treated have been increased, and now radium is considered the treatment of choice in all cases of the menorrhagia of menopause in which the presence of carcinoma is definitely excluded, either by history or by a diagnostic curettement, and in those cases not presenting a large, soft myoma which is apt to later undergo degeneration. The radium is also used in cases of profuse menstruation of the young woman (1) when there is a small submucous fibroid, (2) when no gross pathologic condition is demonstrable, and (3) in cases presenting a large myoma in which there is a definite surgical risk.

However, we have not entirely replaced myomectomy with radium for the treatment of myomas in the patients between the ages of 30 and 40 years. In a series of 510 abdominal myomectomies for uterine myomas done in the Mayo Clinic from January, 1898 to January, 1918, there have occurred 23 full-term pregnancies, and 1 miscarriage. Seven women were pregnant at the time of answering the questionaire, making a total of 31 (12.3 per cent) pregnancies occuring after myomectomy. I have found in the literature but one case of pregnancy going to full term following radium treatment and in our series there was one case of miscarriage with a dead fetus at seven months. Therefore, in most cases of myoma during the child-bearing period, myomectomy is the procedure of choice.

Of the 175 patients that were treated with radium from August, 1915 to December, 1917, there were 2 under 20 years of age (1 was 15). There were 34 from 21 to 30 years; 45 from 31 to 40; 91 from 41 to 50; and 14 were more than 50 years of age. Of this number, 93 had had previous curettements, 37 had had more than one curettement, and 56 had undergone other pelvic operations. In 69 cases there were complications that were considered as relative, though not in every instance absolute contra-indications to operation. There were heart lesions in 34 cases, hypertension in 8, kidney lesions in 11, obesity in 8, and pulmonary tuberculosis in 6. Hyperthyroidism occurred in 2 cases. Seventy-seven of the 175 patients had definitely palpable fibroids. In 82 instances the uterus was classified as "large" and in 45 it was definitely stated that the uterus was not large. It is interesting to note that 155 of the 175 patients were married women, and that of these only 25 had not been pregnant.

TREATMENT

The technic used by us is similar to that in use elsewhere. The patient is given a cleansing douche, the cervix is drawn down by a tenaculum forceps, swabbed with tincture of iodine and gently dilated, and the radium is inserted into the uterine canal. The radium element is encased in a glass tube within a silver tube 0.5 mm. thick, and this, in turn, is enclosed in a rubber tube 0.5 mm. in thickness. This screening is sufficient to filter out the alpha and the soft beta rays which produce the local irritation. A narrow strip of plain gauze is carried into the cervix and the vagina is packed.

The patient is allowed to leave the hospital a few hours after the radium is removed. She keeps off her feet for the following twenty-four hours. If there has been a recent hemorrhage, or if the treatment is given during the menstrual flow, the patient remains in bed until the flow ceases. Usually the flow at the first period after the treatment is as profuse as usual, or it may be increased in amount. The reason for this is not definitely known. It may be because of the local hyperemia of the endometrium, produced by the beta rays, or it may be due to the liberation of the ovarian hormone by the destruction of the corpora lutea.[2]

In the majority of patients more than 45 years of age, and in all in which there is intermenstrual bleeding, a diagnostic curettement is done previous to the radium treatment. If the clinical history is at all suggestive of a carcinoma of the fundus, a hysterectomy is done, for even a very thorough curettement may fail to reveal a carcinomatous focus.

The dosage of radium is gauged by the age of the patient, and by the presence or absence of a tumor. In the young person without a demonstrable tumor, and when it is desirable to continue menstruation, usually one application of 50 mg. of radium element for from four to six hours (200 to 300 mg. hours radium) is used. In older persons in whom it is desirable entirely to stop menstruation, it has been found that an exposure of 50 mg. for from ten to twelve hours has brought about the desired results. In cases in which large dosage is used, menstruation is usually irregular for about two months and ceases entirely after the second or third month; following the lighter exposures it becomes regular and normal in most instances in about two months. It is our custom not to repeat the treatment until an interval of three months has elapsed. If, after that time, menorrhagia continues, a second treatment is given, and, with the exception of one case, the second treatment has been effective. In this instance menstruation ceased for one year, and then became profuse and the periods prolonged. It has been necessary to give a second treatment in 10 instances, in this series. In 8 instances a hysterectomy was done later; 1 elsewhere one month after the radium treatment. One only of these 8 patients had been given a second radium treatment.

Included in this series, is one case of adenomyoma of the uterus, in which a microscopic diagnosis was made at the time of the exploratory incision. There were one intrauterine treatment and four abdominal treatments with entire disappearance of the tumor, which at the time of the exploration was the size of a grape fruit and adherent in the pelvis. At the last examination the uterus was the size of the thumb.

Reports have been received from 143 of the 175 patients and in 55 (38.5 per cent) menstruation had ceased, not to return to the date of the report; in only 14 did the menstruation cease immediately following the treatment. In 15 menstruation ceased for three months and returned; in 29 (20.2 per cent) the menstruation became normal; in 42 it was reported as regular but somewhat profuse, and in 30 (20.9 per cent) it became profuse. Ninety-two patients report their condition as improved, and 27 as not improved. Two died, and in one of these cases the physician reported that the death was clinically due to carcinoma before treatment. There had been negative curettement. The second died of pulmonary tuberculosis which existed at the time of the treatment.

CONCLUSIONS.

Radium is the treatment of choice in:

1. Cases of menorrhagia of menopause not associated with large fibroid tumors, and in which the possibility of carcinoma is definitely eliminated.

2. Cases of menorrhagia in patients between the ages of 35 and 40 years, who have small submucous fibroid tumors, or who have on demonstrable lesions.

3. Cases of myomas in which there is a definite contra-indication to operation.

4. Cases of menorrhagia in the young person, who has resisted all medical treatment, in which very small dosage should be given.

REFERENCES.

1. Abbe, R.: Uterine Fibroids, Menorrhagia and Radium. Med. Rec., 1915, lxxxvii, 380-381.
2. Corscaden, J. A.: The Rationale of Radio-therapy in Uterine Hemorrhage. Am. Jour. Obst., 1918, lxxxvii, 250-272.
3. Graves, W. P.: Gynecology. Philadelphia, Saunders, 1916, p. 207.
4. Horowitz: Quoted by Colwell, H. A. and Russ. S.: Radium, X-ray and the living Cell. London, Bell, 1915, p. 253.
5. Kelly, H. A. and Burnam, C. F.: Radium in the Treatment of Uterine Hemorrhage and Fibroid Tumors. Jour. Am. Med. Assn., 1914, lxiii, 622-628.
6. Kendall, E. C.: Studies of the Active Constituent, in Crystalline Form of the Thyroid. Tr. Assn. Am. Phys., 1916, xxxi, 134-145.
7. Wickham, L. and Degrais: Radiumtherapy. New York, Funk and Wagnalls, 1910, 84-86.

DISCUSSION

DR. W. E. SISTRUNK, Rochester: For several years we have been watching very carefully the patients with menorrhagia who have been treated with radium, and it is very interesting to-night to obtain from Dr. Stacy a report of the results obtained in that group of cases. We all see patients with menorrhagia in whom we are unable to recognize the cause of the excessive bleeding, and we frequently fail to relieve such patients by any treatment; that is, by medical treatment, curettements, hysterotomy, and so on, and in many such instances it becomes necessary, in order to restore the patient to health, to do a hysterectomy.

We were cautious in the beginning of our use of radium because a good many of the men who had used it early had brought about a permanent cessation of menstruation in patients in whom it had been used. Dr. Stacy has shown us that in radium we not only have an agent which in a large percentage of cases will give good results, but also that we may use this substance without the fear of producing an artificial menopause, and this is particularly so in the cases where it is judiciously used.

It seems quite probable that the use of radium in gynecological work will be extended. A great many practitioners are using it in patients with fibroid tumors of considerable size. We have always felt that if a fibroid was very large in size it would be necessary to stop menstruation in order to make the growth disappear or to markedly diminish the size of the tumor, and we have felt that when menstruation was stopped by radium there would also be cessation of the ovarian function. For this reason we have felt it would be better to do a sub-total hysterectomy in such cases on account of the fact that both ovaries could be preserved. We have always felt that a woman still in the child-bearing age could go through her age much better with her ovaries preserved than if they were removed.

Of late, we have been treating an increasing number of patients with fibroid tumors of the uterus with radium, and I believe the time will come when we will use repeated small doses of radium in many patients with small fibroids, and especially so in the ones in whom the fibroids are producing no symptoms. In the patients around the menopause with menorrhagia, radium has acted as a specific. When one can rule out malignacy by a curettage, one large dose of radium within a short time stops menstruation and the bleeding.

To go a little farther, in cases of inoperable cancer of the cervix we have secured far better results from the use of radium than for any operative measure. We have, until the last year or two, used heat in large quantities, in accordance with the Percy idea in such patients, but at the present time we have discarded this method because radium is simpler, easier to use, produces very little discomfort to the patient, and the results following its use are as good if not better than those obtained by the Percy method.

Dr. Stacy's paper is exceedingly interesting because it makes us feel that we can use radium with less fear than we did in the past, and that in a high percentage of cases we will be able to get good results in patients with menorrhagia in whom no pathological condition can be demonstrated in the uterus or in the pelvis.

DR. EUGENE K. GREEN, Minneapolis: In the absence of Dr. J. W. Little, who has used radium for the last 1½ years in the treatment of fibroid tumors of the uterus at the Hill Crest hospital, I would like to ask Dr. Stacy a question which I think will bring out a point of interest for those who use radium, and that is, in regard to using a much larger dose than she gives. The cases that have been treated by Dr. Little are largely those of the nonoperative type. These patients came into the hospital in bad shape, with large fibroids, and very much run down physically. They have been poor risks for operation, and one would hardly know what to do otherwise than use radium. In most of these cases he has used as much as 90 milligrams extending over 24 hours. Aside from a slight reaction following the use in such large doses, there have been no ill results, and I would like to know what Dr. Stacy thinks of giving the larger dose than she has mentioned.

With regard to a reaction in the size of the tumor Dr. Little had one case in particular with fibroids reaching nearly up to the umbilicus, and after radium treatment in the course of two or three months this tumor reached just above the symphysis and the patient felt very much better and greatly improved physically.

He has had no bad results from the use of large doses. He makes a great point in the treatment of these cases by such a conservative method. So frequently they are poor risks from the standpoint of surgery, but with the use of radium there is practically no risk.

Another point he makes in the treatment by radium is that it allows these patients to get up and go about. For instance, he has treated a number of school teachers who have presented themselves with fibroids. They come in, say on Saturday, receive their treatment and go back to work on Monday. They seem to have no discomfort or trouble following its use.

From the report of the cases he has been treating since January 1, 1917, it looks as though radium has come to stay and that there is a distinct place for it in the practice of surgery.

SMALLPOX, BENIGN AND VIRULENT, IN MINNESOTA

(An Extract from the Biennial Report, 1916-17).

MINNESOTA STATE BOARD OF HEALTH
Division of Preventable Diseases
A. J. CHESLEY, M. D., Director

Smallpox reports for the past five years are shown in the following table:

TABLE I
SMALLPOX IN MINNESOTA, 1913-1917

Year	Reported Cases	Deaths	Vaccination History		
			A	B	C and D
1913	2867	7	47	191	2628
1914	1847	7	18	99	1730
1915	1708	5	28	90	1590
1916	1270	1	23	63	1184
1917	2718	20	45	170	2503
5 yrs.	10,410	40	161	613	9635

The cases infected outside the state during 1916 and 1917 are given in Table II.

TABLE II
SMALLPOX DUE TO EXTRA-STATE INFECTION

Where Contracted	Number of Cases	
	1916	1917
Iowa	1	3
Kansas	0	1
Michigan	1	0
Montana	3	2*
Nebraska	0	2
North Dakota	2	5
South Dakota	0	5
Wisconsin	1	2
S. S. Kristianafjord	0	1
Total	8	21

*One case possibly contracted in North Dakota instead of Montana.

For the years 1913-1916, inclusive, smallpox was of mild type, fatal cases usually being very old persons, infants, pregnant women or chronic alcoholics. In 1916, in spite of the prevalence of the disease in many parts of the state, there were but three deaths.

A man aged 50, never vaccinated, a chronic alcoholic in very poor health when the smallpox developed, died February 27th in Minneapolis. A baby boy whose mother was sick with smallpox when he was born March 15th, died March 27th in Rochester. A woman aged 47, never vaccinated, who had a serious lesion of long standing, died in Brainerd, March 28th, four days after developing smallpox.

In 1917, an epidemic of virulent smallpox causing 17 deaths among 92 recorded cases, occurred. During this epidemic, there were also cases of the usual mild type, and the contrast between the benign and virulent types was very evident, supporting Dr. Chapin's contention that there are two distinct strains of smallpox varying only in their virulence.

The history of the introduction of the virulent smallpox into the United States is very interesting, since Massachusetts, New York and Minnesota were affected. The infection was brought in by immigrants exposed to a fatal case on the S. S. Kristianafjord between Norway and the United States.

The Massachusetts State Department of Health traced 48 cases, 10 of which were fatal, to infection carried to Worcester by an immigrant from this ship. Dr. Stanley H. Osborn, epidemiologist of Massachusetts State Department of Health, in report of the investigation states: "The virulence of the virus causing the disease was much greater than the smallpox that has been present in New England in the past few years. This virulence accounts for the 24 cases in vaccinated individuals. In spite of this increased virulence, there were but three deaths in the 24 vaccinated individuals." No information indicating that the tenth fatal case had been vaccinated could be obtained. A Finnish immigrant arrived at a boarding house in Worcester, January 4th. On January 16th, another Finn who lived in this boarding house became sick with smallpox, and the epidemic described in the Massachusetts report for 1917 followed.

Seven cases occurred in Watervliet, New York, through exposure to a case taken sick after visiting Worcester, Massachusetts, during the epidemic there.

The virulent infection first appeared in Minnesota at Eveleth following the arrival of three immigrants. These three Finns while enroute to Christiana, Norway, lost everything they had except the clothes they wore, through the sinking of their ship. At Christiana, they took steerage passage December 10th in S. S. Kristianafjord, arriving in New York, December 24, 1916. A case of smallpox developing on the steamer had been isolated five days prior to her arrival, so that individual contact of the majority of the passengers was relatively slight. Dr. L. E. Cofer, health officer of the port of New York, personally supervised the carrying out of precautions against the spread of smallpox. If the first vaccination was not successful, re-vaccination was done on the ninth day at Ellis Island, where all contacts were kept under observation. Ninety-six per cent of vaccinations were successful; 24 direct contacts were held until January 15th; 422 indirect contacts were held nine days. All were inspected daily and had temperature taken every afternoon.

The three immigrants left New York City January 2nd, for Eveleth, coming through without stop. On arrival they obtained room and board at O. K.'s house, and January 7th, one of the three, A. O., aged 22, began sleeping with L. K., a boy aged 12, never vaccinated. This boy developed smallpox January 20th. His uncle, J. K., aged 45, vaccinated when a child, was taken ill February 5th; removed to Isolation Hospital in charge of nurse, 1 P. M., February 15th, and died at midnight.

The only other case in the Isolation Hospital was Mrs. J. F., dying of tuberculosis. Her four children brought to see her before leaving to enter an orphanage in Duluth, spent the night of February 15th at the hospital on the same floor with the smallpox case, J. K., whose nurse used the same bath as the children. On February 16th, the children were taken to Duluth, without being vaccinated, and no notice of their exposure to smallpox was made to the Duluth health department or to the orphanage. Two of Mrs. J. F.'s children, J. F., m 11, and A. F., f 9, developed smallpox of the virulent type March 1st, and exposed 36 boys and 40 girls in the orphanage, before the nature of the disease was recognized. Soon after, vaccination was carried out, but too late to protect all the exposed. Evidently the infection was spread from the orphanage to a hospital in charge of the same sisterhood as the orphanage, by sisters or employees, and considerable exposure occurred before any precautions were taken or vaccination was considered necessary. In the orphanage, eleven severe cases, and one mild case occurred, with one death from confluent smallpox March 31st in a girl ten years old.

A few cases sick at Brainerd, Cloquet, Carlton and Rice Lake Township, were due to exposure in Duluth or Eveleth. A boy aged four and a girl aged seven, never vaccinated, developed virulent smallpox at Hibbing, March 26th and 27th, respectively.

The Rice Lake Township cases were most unfortunate. An eighteen year old girl employed in a laundry in Duluth developed an eruption June 9th; was admitted to the Isolation Hospital June 13th, as suspected smallpox. At this time 62 cases with 5 deaths had occurred in Duluth and every case with eruption was viewed with suspicion until a definite diagnosis could be made. June 15th, Dr. W. P. Green of the Division of Preventable Diseases, saw the patient and concurred in the diagnosis of chickenpox, which had been made that day. Unfortunately, the girl had been in a ward with smallpox cases. She was immediately vaccinated and later re-vaccinated twice, before being discharged June 22nd, when she went to her home in Rice Lake Township. July 2nd she developed smallpox. Her father had been vaccinated 35 years before. No one else in the family had been vaccinated. On July 10th, her mother, aged 35, and sister aged 4 months, developed prodromes, and July 11th, father aged 41, brother aged 10, two sisters aged 7, brother aged 4, and brother aged 2, developed prodromes. The mother, the father and 4 months old baby had hemorrhagic smallpox. July 31st, brother aged 12, and July 14, sister aged 13, which completes the family, were taken ill. All of these had confluent smallpox. The mother died July 26th, the baby July 18th, and the

TABLE III
CLASSIFICATION OF VIRULENT SMALLPOX CASES, 1917

	Class A	Class B	Class C	Class D	Total
Cases	12	10	62	8	92
Deaths	0	2	15	0	17

father July 25th; three deaths in this family of 11, all of whom had virulent smallpox. Vaccination of contacts and in the community in general was immediately carried out and no further spread occurred in Rice Lake Township from this family. Although outside of city limits, Dr. E. W. Fahey, health officer of Duluth, admitted as many cases as possible to the Duluth Isolation Hospital, since the home conditions were very inadequate for their care.

The virulent outbreak in Minnesota was not studied as carefully as the outbreak in Massachusetts, for the reason that the commissioner of health of Eveleth, where the first case occurred, reported February 20th that he had the outbreak under control, only two cases, one of which was fatal, having occurred. Smallpox in Minnesota, unlike other diseases which present greater emergencies, is not investigated unless there is a special reason for so doing. The state law forbids compulsory vaccination, without which it is impossible to eradicate smallpox. Investigations were made, however, by representatives of the Division of Preventable Diseases, in Eveleth, March 25th, June 18th; Duluth, March 27th, June 15th, June 21st, July 13th, and in suburbs of Duluth, July 17th; Carlton and Cloquet, which are near Duluth, July 23rd, and in Brainerd June 24th. Through these investigations, sufficient detailed information was obtained to show the source of the virulent infection and to explain its spread, which occurred because vaccination of contacts at Eveleth was not carried out, nor was the Duluth Health Department notified of the exposure when certain of the contacts left Eveleth to enter an orphanage in Duluth.

In all, there were 92 cases of virulent type, 17 of which terminated fatally, a fatality rate of 18.5 per cent. The vaccination status of these patients and a tabulation of the fatal cases are given in Tables III and IV.

Another very interesting point is that none of the three immigrants from New York City would admit having had any symptoms whatever, and at the time they were first examined by the Health Commissioner of Eveleth, they showed no signs of the disease. All information had to be secured through an interpreter. A. O., who is supposed to have had varioloid, since the 12 year old boy with whom he began sleeping January 7 developed smallpox January 20, had no old scar from vaccination and showed only a very faint scar from vaccination at Ellis Island. The other two im-

TABLE IV
TOTAL CASES SMALLPOX OF VIRULENT TYPE, 1917

Case	Sex	Age	First Symptoms	Death	Type	Vaccination Classification
J. K.	M	46	Feb. 5	Feb. 15	Virulent	B
C. P.	M	36	Mar. 4	Mar. 14	Virulent	C
C. E. F.	F	11	Mar. 24	Mar. 31	Virulent	C
M. S.	F	23	Apr. 16	Apr. 25	Hemorrhagic	C
M. F.	F	19	June 3	June 10	Hemorrhagic	C
C. D.	F	28	May 31	June 11	Virulent	C
G. W. M.	M	47	June 1	June 15	Confluent	C
M. L.	F	18	May 31	June 16	Confluent	C
M. A. D.	F	55	June 4	June 16	Virulent	C
M. McK.	F	68	June 17	June 21	Virulent	B
T. B. H.	M	1 Mo.	June 10	June 22	Virulent	C
S. W. B.	M	18	July 4	July 8	Hemorrhagic	C
E. F.	F	4 Mo.	July 10	July 18	Virulent	C
M. K.	F	22	June 16	July 18	Confluent	C
E. B.	F	10	July 12	July 20	Hemorrhagic	C
M. Fi.	M	39	July 11	July 24	Virulent	C
Mrs. M. Fi.	F	35	July 10	July 26	Virulent	C

A—Those who were successfully vaccinated within 7 years.
B—Those who were successfully vaccinated over 7 years ago.
C—Those who were never successfully vaccinated.
D—Those who have no definite history of vaccination.

migrants showed old scars, evidently from successful vaccinations, and faint scars from recent vaccination. These men, or at least so their remarks were interpreted, claimed that their clothing was not disinfected at Ellis Island, but this was shown by the records of Ellis Island to be an error. All the clothing and baggage was properly disinfected under the personal direction of Dr. Cofer, and there is no possibility of smallpox infection having been carried in any other manner than by A. C., and in his case, owing to the denial of symptoms, the question was raised: Are there well "carriers" of smallpox virus? This does not seem probable in view of the ease with which infection is usually traced from one smallpox case to another, yet no one can deny its possibility and it should be kept in mind by epidemiologists.

THE TREATMENT OF EMPYEMA

F. J. Savage, M. D., Capt., M. C., U. S. A.
St. Paul, Minnesota

During the Fall, Winter and Spring of 1917 and 1918, empyema of the pleural cavity appeared in such virulent form and in such quantities, as to make the treatment of it a burning question in many cantonments. The importance of the question was recognized by the Surgeon General, and led to the appointment of empyema boards in the Spring of 1918.

The order issued at Camp Custer detailed one surgeon, one medical man, and one laboratory man, to report to the chief of the surgical service as a full time consulting board. They were to direct the study of empyema, pneumonia, and all acute infections of the respiratory tract in all their phases, including etiology, pathology, symptoms, diagnosis and treatment; and to report thereon every two weeks.

It was the writer's privilege to be intimately connected with the empyema situation at Custer for a period of four months, and on the formation of the board to be it's surgical representative. In addition to their other duties, the board was given control of three pneumonia wards. This represented approximately 150 pneumonia and empyema cases.

At the outset it should be kept in mind that 90% of our fatal cases and 80% of the total cases were streptococcic. A large percentage gave a history of a bronchitis lasting from 4 to 5 days up to 6 and 8 weeks. Bronchopneumonia and measles were the two chief antecedent diseases.

A condition was designated as empyema which showed an acute non-tuberculous collection of exudate in the pleural cavity.

The physical finding of greatest value was absent tactile fremitus. This was always confirmed by the needle. The X-ray was used as a routine procedure, and in a considerable percentage of cases was of value.

The one great and burning question was—shall these cases be operated early when the fluid is thin and watery; or shall they be treated by aspiration, or by some other palliative method, until the pus becomes thick and creamy?

When the writer first reported at the Base Hospital at Camp Custer, in the winter of 1918, every man who had a streptococcic fluid in his chest was promptly subjected to a rib resection. The shock of the operation itself was slight as compared to that produced when the inrushing air displaced the heart and collapsed the lung on the operated side. The mortality was 30% . One of the nurses remarked that Sherman may have been right but that he had never seen ward 14.

At a later period a series of cases were treated by aspiration, valve drain, canula drainage, and catheter drainage, in the effort to avoid the unfortunate results of early resection, namely, heart displacement, (with it's accompanying drag on the great vessels) and collapse of the lung. Sixteen cases were resected when the pus was creamy and but one died. The surgical service began to think they had solved the problem. It developed, however, that during this period, fifteen cases were treated by aspiration only, with ten deaths—mortality 66⅔%. The total mortality in this same period was about 55%. In other words, in exactly the same types of cases, which formerly gave a 30% mortality with prompt rib resection, the total mortality of all cases were nearly doubled: but the deaths were recorded by the medical and not the surgical service.

These figures refute the statements of the empyema commission from Camp Lee; published in the journal of the A. M. A. of Aug. 10. Their statement is as follows: "The evacuation of the pleural exudate by operation early in the disease involves greater risks without compensating benefits, than the removal by aspiration. Much of the relief offered by operation, without its attendant dangers, can be afforded by aspiration, repeated according to indications. The condition of the patient at this time calls for medical rather than surgical treatment."

If a patient can be tided over the early stages by aspiration, the operative statistics will be far better than if every case is resected early, but the total number of deaths will be greater. One is not dealing with the ordinary type of empyema as found in civil life. One is dealing with a fulminating toxaemia with large quantities of fluid rapidly formed. One of our cases had 6,000 c.c. withdrawn by aspiration in 7 days—nearly one quart per day.

The statement was recently made at a clinical lecture at Bellevue Hospital that two schools had developed in the matter of handling empyema cases. One advocated early operation, and the other, aspiration early, and resection later.

In the opinion of the writer a compromise position is the procedure of choice. The Brewer tube, connected with a negative pressure system, and used early in the disease, gives good drainage and at the same time prevents extreme collapse of the lung and displacement of the heart. This method was used at Custer in some 10 cases up to May 25. Up to that time the results were satisfactory. The tube is inserted in the axilla, between the ribs, under local anaesthesia. There is practically no shock or pain. Resection is done at a later period, but in the meantime, enough pleural adhesions are formed to prevent extreme collapse of the lung, and the mediastinum is sufficiently anchored by adhesions to prevent any marked heart displacement.

When the pus is not localized, resection of 4 cm of the eighth rib, beginning at the angle and extending outward, seems to be the most satisfactory site of operation. This permits of the use of the Carrell-Dakin method of treatment and gives dependent drainage during convalescence.

The value of the Carrell-Dakin method of treatment has been fully demonstrated. The practice at Custer was to introduce 4 tubes while the patient was still on the table. As a rule the first flushing was done on the table. The occasional case with a bronchial fistula may not permit of the use of this method. Once a day the cavity is completely emptied and flushed until the solution comes away almost clear. After this the customary two hour treatment is used.

Recent work seems to show that the chlorine content of Dakin's solution in an empyema cavity diminishes so rapidly, that if the weight of a chest full of fluid is unpleasant, good results may be obtained by leaving it in the chest 15 to 20 minutes only, and not replacing it until the two hour period is up.

Recent figures from the War Demonstration Hospital, in connection with the Rockefeller Institute, show that 50% of their empyema cases have been discharged to duty within three months.

Before the Carrell-Dakin method was systematically used at Custer, it was a common experience to find a small, non-expansile lung, with a large pus-discharging cavity, two months and more after operation. After this method was instituted, the improvement in the ward was striking. The odor of pus almost completely disappeared, the wounds began to take on a healthy appearance, and the general condition of the patients markedly improved.

In the first series of cases, thirteen out of sixteen showed negative bacterial counts in from four to ten days.

With a negative bacterial count, but with the patient continuing to show septic symptoms, one should look for a pocket of pus not communicating with the main cavity, or for some additional pneumonic imvolvement, or for a distant pus focus. Given a case with a negative bacterial count, a normal morning temperature with a pulse of 90, but with an afternoon temperature and pulse of 100, one would expect to find a walled off pleural or interlobar pocket of pus. For example, if the original empyema had shown a general right sided involvement and the clinical picture

after three or four weeks was as above described, one would expect to find an apical pocket, showing a fluid level on X-ray examination as high as the second or third rib, or a pocket lying between the pericardium on the inner side and a compressed lung on the outer side. In the latter case, the needle inserted just below and to the inner side of the right nipple would show pus.

Localized pockets are opened as may be indicated in each individual case.

The earlier an empyema cavity is rendered sterile, the less fibrous tissue there will be to keep the lung contracted, the earlier the opening may be closed surgically or allowed to granulate in, and the quicker the lung will re-expand. Last, but not least, there will be less probability of pocket formation.

THE TECHNIQUE OF RADIUM APPLICATION

By D. T. Quigley, M. D., F. A. C. S.
Omaha, Neb.

Correct technique in the use of radium tubes is just as important to the user of radium as correct technique in the use of the scalpel is important to the surgeon. While the action of radium rays per se is not poisonous to the tissues, still the dangers of radium in the hands of the unskilled can only be compared to the dangers of the knife in the hands of the unskilled surgeon. Both the clumsy use of the knife and the clumsy use of the radium tube may break into blood vessels and cause death from hemorrhage; both may break into hollow organs, as the bladder, or rectum, causing irreparable damage; both may injure permanently, if unskillfully used, vital organs as eyes, vocal cords, middle ear structures, etc. It will be seen that the successful radium operator must, like the surgeon, have a very keen appreciation of the anatomy and the histology of the different organs of the body, and in addition to this he must have a very complete knowledge of the physiology of the different parts and organs. On the anatomy and the physiology depends the reaction to radium rays and on this, plus pathology, and an exact knowledge of the chemistry and physics of the potent element he is using, the radium operator bases his treatment.

Training in surgery and knowledge of anatomy and pathology are so necessary to the successful use of radium that I believe the use of radium should be kept strictly in the hands of surgeons. That he be a surgeon is most important, but he must also understand something of eye, ear, nose, and throat work, as he will be called to treat the larynx, the middle ear, the eye, the antrum and other locations where special knowledge and skill are necessary. The radium operator must also have a knowledge of the skin and venereal specialty that he may make correct diagnosis of the many skin cases submitted to him and that he be not led astray by the protean manifestations of syphilis. As a Roentgenologist he must be able to read and interpret plates. As an internist he must be able to separate the local from the general in disease, must correctly interpret blood findings, painful conditions, tell an enlarged spleen from a tumor, estimate a patient's vital powers, detect mailingering, etc. As a bacteriologist he must understand the normal and abnormal micro-organisms that may inhabit the cavities and the surfaces where he places his tubes, for instance, the mouth, the rectum, the vagina, the ear, the skin, etc. The particular germs in the particular localities have an effect in influencing the reaction and tolerance, and consequently modifying the physiology and pathology and resistance in each case. As a pediatrist the radium operator must understand the difference between the anatomy, physiology, pathology and resistance of the baby and the adult. As a gynecologist he must have an educated hand to intelligently explore the female pelvis and an educated eye to recognize pathology through the speculum. He must be able to correctly place his tubes in the genital tract and know how large a dose a given case will stand without danger to surrounding organs. The objection will be raised that such a paragon of efficiency does not exist in medicine. Perhaps not, but the skilled surgeon comes nearer to it than any other medical man. Murphy said, "A good surgeon must first be a good physician." In this case I would say, "A good surgeon who is first a good physician may become a good radium operator."

The most important thing in radium technique is the amount used and the percentage of purity. The specimen should be 60 to 90 per cent pure and an amount of at least 50 m. g. radium element should be used. Next in importance is the screening used and time applied and the distance the radium is placed from the diseased area. In the techinque of radium there are two general methods of use. The divided dose method in which relatively small doses of the rays are used over long periods of time, the object being to destroy the disease without producing a burn. The second method is called the "massive dose" method in which the effort is made to kill the disease at once, with a large dose of rays, disregarding the burns altogether.

The burns from radium are benign. They never result in cancer and unless some irritant is present to keep the sore open they always heal in a reasonable period of time. This being the case there seems to be no reason for dragging a treatment over months or years and taking the chance of the cells developing an immunity to the rays or a stimulation of the growth resulting from small dosage. The author has always followed the "massive dose" method, disregarding burns in every case except where hollow organs, or blood vessels, or special sense organs, might be broken into. The surgeon does not hesitate to cut deep and wide because of fear that the wound will not heal. The radium operation should not hesitate to use a dose sufficient to destroy the disease he seeks to conquer.

In considering dosage we may take the skin as the standard and as skin differs in thickness, nerve supply, etc., the average skin of the chest or abdomen may be designated. If then, we consider the burn we get from the application of 100 m. g. radium for 10 hours encased in 1 m. g. silver 1 m. g. rubber and 1 m. g. of gauze, each tube so encased and each tube containing 25 m. g., 60 per cent pure radium salt, this will represent the maximum dose such a surface would stand without destroying the skin through its entire thickness, and which would heal in a reasonable time, and not leave adherent scars. Taking this as a standard and arbitrarily calling it 100 units we may compare the different parts of the anatomy usually exposed to radium rays as follows:

Skin of face, 75 units.
Skin of scalp, 125 units.
Skin of groin, 65 units.
Skin over buttocks, 125 units.
Skin over fascia lata, 125 units.
Skin over ear, 60 units.
Skin over eyelids, 50 units.
Edge of eyelids, 80 units.
Eyeball, 80 units.
Mucous membrane of lips and cheeks, 50 units.
Mucous membrance of tongue, 70 units.
Mucous membrane of rectum, 20 units.
Mucous membrane of urethra, 10 units.
Mucous membrane of larynx, 70 units.
Mucous membrane of bladder, 25 units.
Wall of uterus, 300 units.
Buried in tissues; bone, 300 units; muscle, 200 units.

It will be seen that I consider the eye nearly as resistant to radium as the skin, and the uterus the most highly resistant of any organ.

Embedded in tissue the reaction is not so severe as on the surface. The reason for this is probably because in a case where the radium is buried the surroundings are practically aseptic while on a surface or hollow organ there are more or less micro-organisms to attack the tissues.

In passing to pathology we find carcinoma the most resistant tumor we have to deal with. A 50 m. g. tube will kill carcinoma cells for a distance of 4 cm., if left sufficiently long. Larger quantities will not do much if any better as regards distance, but will accomplish the same result in a shorter time. Sarcoma is probably twice as radio-sensitive as carcinoma, the lymphosarcoma being extremely radio-sensitive. Fibroma and myoma are perhaps the most radio-sensitive, a tumor the size of an eight months pregnancy disappearing in four months time after 40 hours of treatment with 75 m. g. of radium. Pedunculated fibroids respond as well as others if cross-fire is used. Angioma responds to treatment very readily but in children the tumor is much more radio-sensitive than in the adult.

On the same basis of computation as we used in comparing histological differences, we may adopt 100 units as the dose for a skin carcinoma extending as deep as the deepest layers of the

skin of a size that could be just covered by the tubes in question.

Proceeding then to other pathological conditions we make comparisons as follows:

Carcinoma of skin ¼ inch deep, 100 units.
Sarcoma (round cell), 50 units.
Angioma (adult), 50 units.
Angioma (child), 25 units.
Fibroma and myoma, 10 units.
T. B. (lupus), 40 units.
Melanoma, 100 units.
Lymphosarcoma, 30 units.

These comparisons are made on the basis of the tissue being the same thickness and are not taken as practical examples but solely for the purpose of illustrating the difference of radio-sensitiveness in different pathological tissues. For instance, a given dose of radium rays will destroy fibroid tissue ten times as far as it will destroy carcinoma, while angioma, sarcoma, and T. B. lesions are approximately twice as radio-sensitive as carcinoma. Melanoma is about the same as carcinoma and this is not to be wondered at for the modern trend of opinion is that these tumors are carcinoma. In practical work heavy screening should be avoided as much as possible except to protect normal tissues, as beta rays are probably very important to secure the best results. Accurate approximation is another very important feature. I have seen a couple of radium tubes stuck carelessly into the vagina for cancer of the uterus without any regard to the accurate approximation of the diseased area with the tubes. Such methods can only bring bad results. The tube in these cases must be placed clear to the fundus and the whole uterus rayed. 5 m. g. to 75 m. g. covered with ½ m. m. silver and 1 m. m. hard rubber and used for 70 to 80 hours in a week or ten days' period, will give the best results in these cases. In these cases the cervix should be cross-fired by tubes placed horizontally against the cervix at the same time that the tube is inside the cervix.

In dealing with radium the fact should be always borne in mind that light decreases as the square of the distance. For instance, a tube 1 m. m. from a diseased spot will give a certain dose. Place the tube 10 m. m. from the surface and give it the same time and you will not get one-tenth the dose, but one one-hundreth the dose given in the first instance. In other words to get the same dose at 10 m. m. distance the time would have to be 100 times longer than at 1 m. m. distance.

A good deal of misunderstanding and confusion in the matter of radium technique has arisen because of comparing radium with the X-ray. It is well that the student of radium understand that these two agents are different, physically and in physiological action. It would be just as logical to compare arsenic with cane sugar because they are both white, as to compare X-ray with radium, because they both light up the fluoroscope.

A volume would be necessary to properly discuss radium technique. In the hands of one who understands the element and the pathology it is an agent capable of great good. In the hands of one who neither understands the radium nor the pathology the results may be not only negative but harmful.

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EDITORIAL

VOCATIONAL REHABILITATION OF SOLDIERS

In a recent address before the Hennepin County Medical Society, Mr. H. W. Jones, District Vocational Officer of the Federal Board for Vocational Education, pointed out some very interesting facts concerning the vocational rehabilitation of soldiers. These are of such timely importance that they should be given emphasis.

It was not long after the beginning of the great war in Europe that, owing to the new methods of warfare adopted by the Germans —the use of gas and other devices—it was found that the French and English were losing so many men both by death and by wounds, steps had to be taken to rebuild the disabled men for service in civil life, thus releasing others to take their place at the front.

The problem is a serious one, but it has been well met by France and England as well as in the British colonies, especially Canada. Upon entering the war the same problem confronted us and we have been fortunate by profiting by the experience of other nations, especially by our next neighbor, Canada.

The passing of the Smith-Sears Act by Congress in June, 1918, placed in the hands of the Federal Board for Vocational Education the task of the vocational rehabilitation of our disabled men to refit them for the tasks of life where they could be taught to become self-supporting with their disability, to an equal, if not to a greater extent, than before they were injured.

The War Risk Insurance which every soldier and sailor was expected to take upon his enlistment covering his total disability, was payable to his family in case of his death, or to him direct if he were entirely unable to care for himself. The possession of War Risk Insurance policies entitles every man automatically at the time of his discharge from the hospital, if suffering from an injury exceeding 10%, to compensation equal to his base pay, whatever that might be. To this is added by the Federal Board for Vocational Education an amount sufficient to bring it up to $65. To this the man is entitled during his training for a new profession or occupation.

Each man makes application for compensation from the Bureau of War Risk Insurance at the same time filling out blanks applying for such training as in the judgment of the Board is best fitted for each man's individual case. What the man did before going into the service, what he would like to be trained to do, together with the suggestions of the Board's trained Adviser, govern to a considerable extent the man's placement in suitable training. No stone is left unturned in discovering what is the best thing to be done for each man regardless as to what it may cost.

After the program of the man has been mapped out by the staff of the local Board, the matter is put up to what is known as the Case Board, consisting of District Vocational Officer, Medical Officer, an Employer and Employe called in from outside, the Employer looking at the program from the standpoint of the man who is to give employment, and the Employe through the eyes of the man himself. When thus approved, each case is sent to the office in Washington, which wires back approving course, and the man is placed in training.

There are no special schools established for this training, already existing institutions being found in abundance for nearly every trade or vocation. In exceptional cases, it may be necessary to arrange with some line of industry where the man may be placed ás an apprentice.

It is the work of the Board to keep in touch with the man's progress during this training. If he is not making good, compensation is stopped and the man is obliged to go it alone. Otherwise the Board finds a position for the man at the completion of his course when qualified, and even after placement keeps in touch with him to see that he is making good and that the employer is doing the square thing by him. It will thus be seen that the man is placed in a position to be self-supporting, and a full fledged independent American citizen, much better than the old pension system, is the result. No man need now be found on the corners of the streets selling lead pencils because of being disabled through the war.

THE VOLUNTEER MEDICAL SERVICE CORPS

Early in February each physician in the United States exclusive of those who served in the Medical Corps of the Army for the past two years and members of the Volunteer Medical Service Corps, received a communication from the Council of National Defense, requesting that he fill out and return promptly to the Washington office an accompanying questionnaire, so that there may be on file in Washington complete individual information covering the members of the profession. Simultaneously with the distribution of these questionnaires, state and county representatives of the Volunteer Medical Service Corps were instructed to urge all doctors in their communities to comply promptly with the request of the Council to fill out and forward promptly to Washington the blanks sent them; and to advise those who by any chance failed to receive blanks, to communicate with the Council of National Defense at once in order that application blanks might be furnished them.

The Volunteer Medical Service Corps was organized early in 1918 to serve the Government during the emergency of war. As this emergency has ceased to exist, active membership in the Corps is no longer solicited. However, the survey initiated by this organization last year has proved of such value as a source of information concerning the individual members of the medical profession that the Surgeons General of the Army, Navy and Public Health Service have requested the Council of National Defense to complete it so as to include every doctor in the country, in order that a permanent record of the profession may at all times be available for reference in future emergencies. Upon their completion, the records will be transferred to the Surgeon General's Library where they will be kept up-to-date by a force assigned for the purpose, and be accessible to all Government bureaus.

Every physician is requested to co-operate with the Council of National Defense in making this record complete, by returning at once the questionnaire received or by writing to the Medical Section of the Council of National Defense, Washington, D. C., and requesting that a blank be sent him if through an oversight he did not receive one.

MINNEAPOLIS CLINIC WEEK

The Clinic week held in Minneapolis last year from April 8th to 12th was such a decided success and so many inquiries have been received from out of town physicians regarding further Clinics that the Executive Committee have decided to make it an annual event.

The Clinic will be held from May 5th to May 9th, inclusive, and many new features will be added.

A more detailed announcement will be made in the next issue of *Minnesota Medicine.*

Physicians Licensed to Practice in Minnesota

January 22, 1919

BY EXAMINATION

Bentley, Norman Phillip....Syracuse U., 1909
Bjorgo, Carl Walter.....Rush, 1918
Hanson, Harlow James.....U. of Ill., 1919
King, William Robert.....Harvard, 1917
Waldie, George McL.....Tufts, 1911

BY RECIPROCITY

Dummer, William Martin. Northwestern, 1918
Hook, John Stuyvesant..Western Pa. U., 1904
Lemon, Willis Storrs.....Toronto U., 1905

OBITUARY

DR. ELIJAH S. KELLEY

Dr. Elijah S. Kelley, a resident of Minneapolis, for 52 years, died on February 8th, at the age of 72.years. Dr. Kelley was born in Canada on June 24th, 1846, coming to Minneapolis when about 21 years of age. He was health commissioner of Minneapolis from 1891 to 1895.

DR. C. M. OBERG

Dr. C. M. Oberg, Minneapolis, died on January 30th of pneumonia after an illness of about ten days. Dr. Oberg was a graduate of the University of Minnesota, class of 1910. He is survived by his widow, two daughters, his parents, and six brcthers. The funeral took place on February 2d, with burial at Lakewood cemetery.

DR. J. M. O. TUFTY

Dr. J. M. O. Tufty for the last thirty years a prominent physician of Duluth, died suddenly of heart failure on February 4th. Dr. Tufty was born in Norway, April 27, 1857, and was educated at the University of Christiana, coming to Duluth in 1886 and following his profession up to the time of his death. He is survived by his widow and daughter and two sons.

DR. S. O. FRANCIS

Dr. S. O. Francis, of White Bear, Minn., died January 30, after an illness of several years. Dr. Francis was born on February 7, 1860, in Dudley, Ill. He was a graduate of Asbury University, Greencastle, Ind. He later moved to St. Paul, where he first practiced medicine, moving to White Bear in the summer of 1887. During the succeeding years, nearly thirty-two in all, he was closely identified with the interests of White Bear village and the surrounding territory. His funeral was held on Sunday afternoon, February 2d, with interment at the Episcopal cemetery.

OF GENERAL INTEREST

Dr. Bernard Bohling has returned from France and has resumed his practice in Sandstone, Minn.

Dr. J. M. Hall, Minneapolis, who has been stationed at Camp Greenleaf, Ga., has returned to his home.

Dr. K. C. Wold, recently returned from a six months Army service and expects to resume his practice in St. Paul.

Dr. J. H. Cosgrove has been mustered out of the medical reserve corps and has resumed his practice at Duluth, Minn.

Dr. W. W. Drought, Fergus Falls, has gone to New York, where he will spend some time doing research and post-graduate work.

Dr. Ida M. Alexander has returned to her home in Sauk Center after having spent a year in the service of the Red Cross in France.

Dr. F. C. Wheat of Minneapolis has taken over the practice of Dr. C. M. Storch at Anoka, Minn. Dr. Storch has returned to Minneapolis.

Dr. Rachel E. Moulton, Minneapolis, has gone to New York where she expects to spend several weeks doing research work in medicine and surgery.

Dr. J. Gendron who has been a captain in the medical division of the U. S. Army, has returned home and has resumed his practice in Grand Rapids, Minn.

Captain O. I. Sohlberg, St. Paul, was recently given a citation to General Headquarters for service with the Eighteenth Division to which he has been transferred.

Dr. E. E. Webber, Chisholm, Minn., was recently appointed chief surgeon of the Duluth, Mesaba and Northern Railroad, succeeding Dr. W. H. Magie of Duluth.

Dr. A. C. Strachauer, Minneapolis, has been appointed acting chief of the Department of Surgery, University of Minnesota Medical School, until January, 1920.

Dr. H. J. Hanson, Hutchinson, recently returned from Chicago, has moved to New London, Minn., where he has become associated with Dr. M. O. Oppegaard.

Dr. M. C. Piper, Sanborn, has received an honorable discharge from the army and is spending a few weeks in Chicago before returning home to resume his practice.

Dr. W. L. Palmer, Albert, Lea, Minn., has been honorably discharged from the army, and is now in Chicago where he will take a short course of study before returning to resume his practice.

Dr. Wayne W. Bissell and Dr. Walter M. Boothby, who have been serving with the U. S. Medical Corps and who have spent several months in active service in France, have returned to Rochester.

Dr. Asa W. Daniels, pioneer physician of Minnesota, having practiced in the city of St. Peter for over fifty years, recently celebrated his ninetieth birthday at Pomona, California, where he has made his home for the last few years.

Dr. M. S. Bringman of Boston, Mass., has taken over the practice of Dr. J. T. Schlesselman of Good Thunder, Minn. Dr. Schlesselman, it is announced, will devote his practice to the eye, ear, nose and throat, and will locate at Mankato, Minn.

Dr. A. H. Schwartz, Duluth, who has been discharged from the service at Camp Greenleaf, is recovering in a hospital at Los Angeles, from illness developed while in the army. As soon as his condition permits he will return to Duluth and resume his practice.

Dr. C. C. Burlingame formerly on the staff of the Fergus Falls State Hospital was recently appointed director general of the medical and surgical department of the Red Cross in France. Dr. Burlingame went to France early in the war and has received a decoration for bravery from the French Government.

Dr. Robinson Bosworth, Advisory Executive Secretary of the State Advisory Commission, has been honorably discharged from the U. S. Military Service and has returned to Minnesota to assume his previous duties. During his absence, Dr. Bosworth was stationed at U. S. Army Hospital No. 21, Denver, Colo., which institution is given over to the care and treatment of tuberculous soldiers.

It is amusing to learn that the procuring of medical freedom and equal recognition for all schools of medicine is the ultimate purpose of the Minnesota Anti-Vivisection League, which held its first semi-monthly meeting at 917 Marquette Street, Minneapolis, recently. The immediate work to be undertaken by the league, Dr. H. A. Zettel, St. Paul, the president, said, is raising the membership from seventy-five now enrolled to 10,000 and to oppose through organized effort, vivisection, compulsory vaccination and inoculation and all forms of cruelty toward man and beast.

The annual session of the Southern Minnesota Medical Association was held in Mankato on January 20th and 21st. The program was opened with a toast to the medical men in the war by Dr. Harry J. O'Brien of St. Paul. Dr. W. J. Mayo of Rochester described some of the old hospitals of London; Dr. M. S. Henderson of Rochester, the president, gave his annual address and Mr. George W. Peterson of St. Paul spoke on "Legal Aspects of Medicine and Surgery." On the evening of January 21st, Dr. G. F. Merritt and Dr. J. H. James of Mankato were the guests of honor at a banquet held at the Elk's Club.

A medical department, under the direction of the Board of Foreign Missions, to guard the health efficiency of its missionary workers, has been established by the Methodist Episcopal Church in connection with its missionary centenary to raise $120,000,000—$85,000,000 for the Church North and $35,000,000 for the Church South—for general world upbuilding and extension of its missionary work at home and abroad. Dr. J. G. Vaughan, M. D., formerly of Nanchang, China, is executive secretary of the new department with temporary offices at the headquarters of the Missionary Centenary, 111 Fifth Avenue, New York. Dr. Vaughan was graduated from the Northwestern Medical School, Chicago, in 1907 and for six years was a medical missionary in China. On his return to this country in 1916, he became connected with the office of the chief surgeon of the Chicago, Rock Island & Pacific Railroad in Chicago. He left that position to organize the new medical department of the Methodist Foreign Missionary Board. Missionaries on the field and on furlough will have the benefit of counsel from the new department, while all candidates will undergo their medical examinations from the physicians in charge. To provide for the best service in this respect, suitable offices and equipment will be obtained with a sufficient staff of trained workers to

meet the increasing demands arising from the enlarging force which the Centenary program will require in the field. The Church invests from $20,000 to $50,000 in each missionary for life work and it will be one of the duties of the medical department to see that each person accepted is a "good risk." Supervision of the health of the workers in the field will gradually be taken over by the new department.

Lieut. Paul J. Preston, formerly associated with Dr. R. E. Farr of Minneapolis, has been with the British Expeditionary Forces for the last fifteen months and was recommended for the British Military Cross after the battle of September 27th-October 1st. Out of twenty-two officers who went into this battle, only four—the Commanding Officer, the Adjutants and Dr. Preston—came out of it. In a recent letter to Dr. Farr, Dr. Preston writes as follows:

"You will no doubt be surprised to hear of my being decorated with the Military Cross (British.) I was recommended for it after our battle of September 27 to October 1st, during which time we went through "Hell" and back again. There were only four company officers, the C. O., Adjutants, and myself, came out of it, out of twenty-two officers, so you can see what our casualties were, saying nothing of the N. C. O.'s and men we lost. During those three days I put through between four and five hundred wounded at my dressing station, of course not all of them being from my battalion.

"I am very pleased on receiving the honor as it is a very pretty medal and a nice memento of the war. The reason for the delay in being notified of having received it was because it had to go through all the American channels as well as the British."

Hospitals are to be built in the five republics of South America, which, by interdenominational agreement, have been placed under its supervision, by the Methodist Episcopal church as a part of its Missionary Centenary program the purpose of which is to raise $120,000,000 (in connection with the southern branch of the denomination) for world upbuilding and the extension of missionary work. There is at present not one hospital in the entire South American continent under the direction of any American Mission Board. There is one union dispensary in Rio de Janeiro — that is all. The Methodist Foreign Mission Board has engaged Miss Charlotte A. Aikens, editor of the Trained Nurse and Hospital Review, (New York) to tour Argentina, Uruguay, Chile, Bolivia and Peru to study the needs of the field and the conditions which prevail there. After her report has been received the number and location of hospitals and health stations to be built in the five republics as part of the centenary program will be announced. Miss Aikens, after a postgraduate course in nursing at Polyclinic Hospital, New York, was in succession, superintendent of the Sibley (Methodist Episcopal) Hospital in Washington, D. C., of the Iowa Methodist Hospital in Des Moines, and of the Columbia Hospital in Pittsburgh. She is known as a writer of text books on hospitals and nurses' training. She has been given a leave of absence by the Trained Nurse and Hospital Review to make the South American trip for the Methodist Missionary Centenary.

Duluth pharmacists and physicians will oppose the bill introduced in the State Legislature by Guy E. Dilley, St. Paul representative, which prohibits the sale or manufacture of any drug, liniment, extract or condiments which contain more than five per cent alcohol; forbids the use of anti-toxin, vaccine, serum or tuberculin for use of man or beast that have after-effects. A meeting will be held in the near future to send delegates to St. Paul to oppose the bill.

The bill also provides that all packages containing drugs or medicine shall bear a copy of the prescription of ingredients in plain English and that any package or bottle containing alcohol, morphine, heroin, cocaine or derivatives shall be marked in bold letters "Dangerous."

Druggists point out that alcohol must be used for tinctures and as a solvent for the majority of drugs which are not soluble in water, but in alcohol or ether alone. Ether, they say, could be used, but it would be more dangerous than alcohol.

"Adoption of such a law would practically put every drug store in the state out of business," E. H. Whittaker of the Orpheum pharmacy stated. "Few drugs can be sold which can be dissolved in five per cent alcohol. Use of alcohol is absolutely necessary. The government has listed all medicines containing alcohol which may be used as a beverage and are handling the situation with a strong hand."

"Putting the ban on toxins which have after effects would prohibit the tuberculin test in cattle," Dr. C. A. Newton, city veterinarian said recently. "The bill is one of the foolish pieces of legislation that has come to my attention."

That the word "Dangerous" upon all medicines containing the drugs enumerated in the bill is folly is the contention of the druggists. Many medicines do not contain enough of the drugs to make them dangerous and such labeling would unnecessarily frighten the users.

NEW AND NON-OFFICIAL REMEDIES

During January the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

Dermatological Research Laboratories:
Neoarsenobenzol

Guiseppe W. Guidi:
Litiolo

Merck and Co.:
Digitan
Digitan Tablets, 1½ Grains
Quinine Ethyl Carbonate-Merck

Monsanto Chemical Works:
Chloramine-T, Monsanto

NEW AND NON OFFICIAL REMEDIES

Chloramine-T Monsanto. — A brand of chloramine-T which complies with the New and Non-official Remedies standards. The properties, actions, uses and dosage are described in New and Non-official Remedies, 1918, p. 156. Monsanto Chemical Works, St. Louis, Mo.

Chlorinated Eucalyptol, Squibb. — Eucalyptol chlorinated at room temperature. It is used as a solvent for dichloramine-T in the treatment of infected wounds, etc. The solution should preferably be made as required. E. R. Squibb and Sons, New York.

Arsaminol.—A brand of arsphenamine which complies with the New and Non-official Remedies standards. Arsaminol is supplied in sealed tubes containing, respectively, 0.1 Gm., 0.2 Gm., 0.3 Gm., 0.4 Gm., 0.5 Gm., and 0.6 Gm. Takamine Laboratory, Inc., New York (Jour. A. M. A., Jan. 18, 1919, p. 193).

Digitan.—A digitalis preparation said to contain digitoxin and digitalin in the form of tannates. It is standardized biologically. Digitan was first introduced as digipuratum and is made under the digipuratum patent by license of the U. S. Federal Trade Commission. The actions, uses and dosage of digitan is the same as those of digitalis. It is sold in the form of a powder and as digitan tablets 1½ grains. Merck and Co., New York.

Neoarsenobenzol (Dermatological Research Laboratories).—A brand of neoarsphenamine complying with the New and Non-official Remedies standards. It is marketed in tubes containing, respectively, 0.1 Gm., 0.3 Gm., 0.45 Gm., 0.6 Gm., 0.75 Gm., and 0.9 Gm. Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia (Jour. A. M. A., Jan. 25, 1919, p. 275).

PROPAGANDA FOR REFORM

Misbranded Nostrums. — The following "patent medicines" have been the subject of prosecution under the Federal Food and Drugs Act: Paine's Celery Compound; Botanic Blood Balm; Owens' Wonderful Sore Wash; Lafayette Cough Syrup; Gilbert's Gravel Root Compound; Strange's Rheumatic Remedy; Baur's Diamond Brand Bromides; S. B. Cough and Consumption Remedy; Gowan's Preparation; Urol; Boxenbaum Discovery; Tablets Creavita; Old Lady Fulten's Comforting Pills; C. C. C. (Crownall Elastic Capsules); Victor Injection; No. 19 Compound and No. 6 Compound; Hemogenas Pills; Restorative Tablets—Fountain of Health; Denn's Strong, Sure, Safe and Speedy Stomach, Liver, Kidney and Rheumatism Remedy; Dr. Navaun's Mexican Lung Balm; Dr. Navaun's Kidney Tablets; Dr. Chas. DeGrath's Electric Oil; Bovinine; Fritch's Vegetable Liniment; Perkin's National Herbs Blood Purifier, Kidney and Liver Regulator; Dr. Lemke's Golden Electric Liniment; Dr. Lemke's St. Johannis Drops; Mentholatum; Enteronol; Dr. Harter's Lung Balm; Dr. P. Phelps Brown's Herbal Ointment; Taylor's Horehound Balsam; Breeden's Rheumatic Cure; Sulphur Bitters; Dr. DeWitt's Eclectic Cure; Dr. DeWitt's Liver, Blood and Kidney Remedy; Payne's Sylas; Dr. Bell's Pine Tar Honey, and Lung Germine (Jour. A. M. A., Jan. 4, 1919, p. 59).

"Aspirin" a Common Name. — The claim of the Bayer Company to the exclusive right of applying the name "aspirin" to acetylsalicylic acid will be definitely set aside if the recommendation of the examiner of interferences of the United States patent office is upheld. The stand taken by the patent office is in line with the established principle that no one can have a monopoly in the name of anything. Since "aspirin" has become the common name for acetylsalicylic acid, no one firm can have an exclusive right to it (Jour. A. M. A., Jan. 11, 1919, p. 119).

The Quality of the Market Supply of Procaine. —The local anesthetic procaine (first introduced as novocaine by the Farbwerke vorm. Meister, Lucius and Bruening, Hoechst A. M. Germany)—is now man-

ufactured by the Abbott Laboratories, the H. A. Metz Laboratories and the Rector Chemical Company. The products of these three firms were accepted for New and Non-official Remedies after the A. M. A. Chemical Laboratory had reported specimens chemically satisfactory and the Cornell Pharmacologic Laboratory had determined that they were not unduly toxic. In accordance with its announcement to report from time to time on the quality of American made synthetics, the Council on Pharmacy and Chemistry now publishes a report on the quality of the procaine now supplied to physicians. The examination demonstrates that the three brands were of a satisfactory quality. Some of the specimens of procaine-Abbott and procaine-Rector had a yellow or light brown tinge (a specimen of procaine-Metz "novocaine" recently sent the Council also had a slight yellow tinge), but so far as the evidence goes there is nothing to indicate that the discolored specimens are seriously impure. The Council considers the use of the discolored product justified in the present emergency, but urges that for the future a colorless preparation be supplied (Jour. A. M. A., Jan. 11, 1919, p. 136).

Pluriglandular Mixtures.— The Council on Pharmacy and Chemistry reports that the following preparations put out by Henry R. Harrower have been found ineligible for New and Non-official Remedies: Caps. Adreno-Spermin Comp.; Caps. Antero-Pituitary Comp.; Caps. Plecerto-Mammary Comp.; Caps. Thyro-Ovarian Comp.; Caps. Hepato-Splenic Comp.; Caps. Pancreas Comp., and Caps. Thyroid Comp. Each of the mixtures contained one ingredient or more which is neither recognized in the U. S. Pharmacopoeia nor admitted to New and Non-official Remedies. For obvious reasons the Council does not accept a mixture containing an indefinite ingredient; hence, it would be necessary as a preliminary for the consideration of any one of the mixtures that their unofficial ingredients be made eligible for New and Non-official Remedies, by the submission of evidence that such ingredient is of uniform composition and that it is therapeutically valuable when given by mouth. The mixtures were also ineligible because in the light of our knowledge the administration of gland mixtures in the host of conditions enumerated in the advertising circular of Harrower is irrational and on a par with the use of shotgun mixtures once in vogue (Jour. A. M. A., Jan. 18, 1919, p. 213).

Unsuccessful Attempts to Transmit Influenza Experimentally.—Two extensive attempts have been made under the auspices of the U. S. Public Health service and the U. S. Navy to Transmit influenza experimentally. Inoculations were made of pure cultures of the influenza bacillus, of secretions of the upper air passages in the early stages of influenza, and of blood from typical cases of influenza, and other methods of transmitting the disease were tried. In no case was influenza developed (Jour. A. M. A., Jan. 25, 1919, p. 281).

Evidence.—The Cutter Laboratory advertises that a physician has used between 700 and 800 doses of its Mixed Vaccine-Respiratory Infections as a prophylactic without a single failure to "protect" against the disease. The Cutter Laboratory thinks this is evidence which "is convincing enough to satisfy even the most conservative." If a physician were to report that 643 of his patients who had used salt instead of sugar in their coffee had remained free from influenza, would this be evidence of the prophylactic value of sodium chlorid? The science of therapeutics is complex enough at its best; and with commercialism dominating the production of therapeutic agents, the likelihood of ever arriving at anything approximating a true science of therapeutics seems hopeless (Jour. A. M. A., Jan. 4, 1919, p. 45).

Coca-Cola.—Analyses made by Federal chemists showed it to contain from 0.92 to 1.30 grains of caffein to the fluidounce. It would seem that in the interest of the public health the indiscriminate sale to children and adults of an alkaloid like caffein in the enticing form of a "soft drink" is to be deprecated (Jour. A. M. A., Jan. 25, 1919, p. 299).

Some "Patent Medicines" Investigated by the Government.—The following are the names of proprietary medicines which have been the subject of prosecution under the Federal Food and Drugs Act in the Government's attempt to protect the public against fraudulent or misleadingly advertised products: Royal Baby's Safety; Simpson's Cerebro-Spinal Nerve Compound; Constitution Water; Tweed's Liniment; Pulmonol; Crown Skin Salve and Pile Cure; King of the World and Family Liniment; Ka-Ton-Ka; Greenhalgh Diphtheria Remedy; Mountain Rose Tonic Tablets and Herbaline; Parmint; Sulphurro; "Liveon, The Ninety-Day Consumption Cure;" "Liveon Lung Discs;" White Beaver's Cough Cream and Wonder Work; Watkins' Vegetable Anodyne Liniment, Female Remedy and Kidney Tablets; Nature's Creation Co.'s Discovery; Radium Healing Balm; Phuton Kidney Remedy; Palmer's Skin Whitener; Burnes Baby Relief; Sayman's Healing Salve; Sayman's Vegetable Wonder Soap; Humphreys' Pine Ointment; Witch Hazel Oil (Compound); Hill's Honey and Tar Compound; "La Franco Combination Treatment" and "La Franco Vitalizer No. 200" (Jour. A. M. A., Jan. 25, 1919, p. 297).

CORRESPONDENCE

New York, Jan. 20, 1919.

My Dear Doctor Richards:

You asked me to inform you what was being offered in the East in post-graduate work in Internal Medicine.

Harvard offers good work in X-ray diagnosis and special courses in Diseases of the chest and Diseases of the abdomen. Apparently they are not anxious for many matriculants until a little later as everyone was over-worked during the period of the war.

John Hopkins will not offer any post-graduate work until June 1st.

Here at the New York Post-Graduate Medical School work is apparently going on just as it was before the war. At present there are about 200 registered; about 75% are men in uniform who have recently been dis-

charged, and the majority of them are taking the Urological course.

I am taking the following courses here: General Medical Diagnosis, Pathology, and Clinical Microscopy and Chemistry. After a few months I am going to Harvard for special courses in Diseases of the abdomen, Diseases of the chest, and X-ray work.

Several friends have already written me regarding what was being offered in the East; you may refer anyone whom you wish to me for details, and I'll try to answer their questions. Very sincerely yours,

I. J. MURPHY, M. D.

Seattle, Wash., Jan. 29, 1919.

My Dear Mr. Editor:

Prior to this war various evolutionary forces, without intelligent aid or organized assistance on the part of the medical profession, gradually compelled and are still compelling the followers of medicine into:

1. Accepting the specialist.
2. Demanding hospital facilities.
3. Associating and segregating into more or less organized groups.
4. Establishing private clinics, as the Mayo Clinic and similar institutions.
5. Establishing, as just instituted by Columbia University of New York, a still more advanced form of scientific medical organization, a clinical laboratory.

The same evolutionary forces have caused the laity:

1. To form mutual benefit organizations for the sick.
2. To demand contract practice.
3. To form hospital associations.
4. To demand state aid.
5. To demand free clinics.

In every one of these vitally important politico-economic movements, and in view of the fact that millions of men will return after the war and demand for themselves and for their families the same scientific treatment they have experienced under military organization, medicine as a profession has failed to recognize the same exciting cause in each instance—an economic demand that the theoretical standard of efficiency "Medical Ethics" must be replaced by a more practical standard, "Ethical Economics." This standard demands the application of scientific methods through economic organization to every-day life, so that efficient medical and surgical treatment will come within the reach not of the few who can receive hospital treatment in standard institutions but of every human being.

Confronted by the above politico-economic facts, a very pertinent question presents itself to the medical profession at large: What is medical organization—medical education—doing to solve these problems, at a time when an imminent reconstruction period confronts every form of organized society including the profession of medicine?

Based on observation and experience of 20 years the writer claims that virtually nothing practical has been systematically undertaken.

Nowhere is there evidence that medical organization—medical education—has ever recognized three basic psychologic factors that govern all intelligent human acts:—

1. One hundred per cent of the representatives of medicine, physicians, are human beings, and the minds of the highest and lowest are compounded of the same elements, held subject to the same laws of action; and the knowledge that any one of them possesses comes—as it does to every other human being—through the ordinary channels of the senses.

2. In the search for knowledge in every branch of human society, including medicine, science has produced innumerable mechanical aids to increase the efficiency of the senses of man. Therefore, logically, all things being equal, the mind of man gathers knowledge in proportion (a) to the number of mechanical aids employed to increase the efficiency of the senses; (b) the accuracy with which these aids are employed.

3. As a rule normal human emotions govern every human being, including the physician. Therefore, if the recompense for labor does not enable the physician to carry overhead expenses; does not give him time and funds for improvement, study, travel and necessary recreation; does not produce profit that is protection for his family and for himself in sickness and old age; he can neither give efficient scientific service nor continue to progress. If adequately recompensed he can give scientific service far more readily and is more likely to progress.

Yet, in the face of these obvious evolutionary politico-economic movements and the basic psychological facts that govern intelligent human action, medical education is still demanding for every individual admitted to the study of any branch of the science and art of medicine a high standard of preparatory education, in substance a B. A. degree from a recognized educational institution.

This standard, combined with the principles of education that are employed in every medical college after admission to study is such that it can be justly claimed that the educational methods pursued tend to make the graduate physician in this work-a-day world pursue the practice of medicine as a pure science, that can isolate itself, that needs no association with the applied sciences, especially economics. For instance, medical education during all these years has apparently never conceived of the practical necessity of recognizing the psychological fact No. 1. as a pre-educational factor of the utmost importance.

The United States Government, on the other hand, by the present war has been unceremoniously forced into recognizing its educational value—as evidenced by the first standard of admission to the aviation service, where the highest possible human skill is required in order to successfully destroy life. In this initial examination the most accurate possible physical and mental tests are employed in order to ascertain not only the inherent character and personality of the candidate, but more especially the acuteness, stability and durability of **every one** of his senses.

In the profession of medicine, however, where there is a demand, if it were possible, for even greater character and personality, acuteness, stability and durability of the senses—the object of the physician being to preserve life—no recognition is given to the fact that effi-

ciency in applying abstract knowledge depends upon the efficiency, not of one but all of the special senses.

The student of medicine may be deficient in one or more of his special senses, have little tactile sensibility, a poor sense of smell or hearing, defective eyesight, little character and no personality adaptable to a physician. Yet no tests are made to ascertain or correct these defects, and the student is graduated and permitted without any organized supervision to try to preserve—where he would not on the same grounds be permitted to destroy—life.

As to the educational value of the psychological fact No. 2, there can be no question that the mechanical aids to scientific medicine (which include all laboratory methods, even history filing and compilation may be added) have become so numerous, have so developed in detail that to attain efficiency requires not general but definite technical knowledge.

There can be no question that medicine will become organized in the future, and when so organized it can be no exception to the general rule and must attain efficiency by having sub-division of labor—therefore organization of labor and equipment.

Medical education as conducted to-day may be ethical but it is still decidedly theoretical. Medical schools virtually only graduate officers and then only colonels. No provision is made for officers of lesser rank for the privates in the form of technicians. For privates, we as a profession, must take the unsuccessful physician, volunteer nurse, half-trained office girls, or any kind of unskilled help available, whom each physician must train for himself after his own sweet will in order to fill the ranks of scientific medicine with privates. Yet economic organization is staring the profession in the face. With this army thus organized we guarantee to defend the public from disease—then wonder why our efforts as a profession are not appreciated!

Even the colonel, who may later wish and be willing to work for a higher rank—for instance, to become a specialist—there is no institution provided where through concentration of skilled leaders, equipment, technical assistance and economic organization he can learn his specialty from A to Z, and be instructed and equipped with a modified plan of economic organization, whereby he can do justice to the public and his profession by maintaining and delivering the high standard of goods which he advertises to sell in competition with the inferior grades of the cults by attaching to his name an "M. D."

As a profession, in most of our medical colleges, we unquestionably try to manufacture a high standard of goods, which goods must be sold in the open market to the public. We advertise to the public that the sign "M.D." signifies the highest standard. Yet as a profession have we adopted any organized means whereby we can demonstrate to the buyers, the laity, the value of standard "A" as compared with the imitation "B," and in so doing increase the demand for standard "A" goods, to the benefit of both producer and consumer? I think not.

The public through universal education is being taught to think, to reason, yet the medical profession today, like the cults, is asking the public to accept goods on faith without investigation; and we claim as a standard science based on reason, not wholly on faith.

If the profession of medicine will not undertake to solve these politico-economic problems for itself, it is true that evolutionary forces will solve them for us, but with brute force and a corresponding indiscriminate destruction—unless man employs the intelligence that nature has given him to anticipate evolutionary movements, through the use of intelligence scientifically applied but governed by the higher human emotions.

It is not within the limits of this letter even to outline the means to the end that experience suggests. But the old adage always proves true that where there's a will there's a way.

The object of this letter is to arouse, with your assistance, sufficient sentiment to instigate a systematic, organized movement to attain the end sought—the practical application of ethical economics; so that humanity may be efficiently served by the profession of medicine, and the profession win universal respect and attain efficiency through following out not only ethically but economically the dictates of the noblest of all the sciences.

The accompanying pamphlet is intended to prove that such a movement is feasible, for if an imperfect, experimental organization, based on a belief in principles, carried on by an individual, can apply these principles of ethical economics successfully, certainly with the intelligence of the profession concentrated towards that end there can be no question of the outcome of the many economic problems confronting the science of medicine.

Criticism of this pamphlet is invited, and the writer would appreciate notice or information of any criticism or suggestion—direct or indirect—that may be offered.

Respectfully submitted,

G. S. PETERKIN, M. D.

PROGRESS IN MEDICINE AND SURGERY

CONGENITAL DISLOCATION OF THE HIP: Clarence L. Starr (The Canadian Medical Association Journal) briefly gives a history, the etiology, the pathology, symptoms, diagnosis and treatment of this interesting condition.

Until the past two decades, practically nothing was done toward treatment of this condition. At first, open operative methods were used by Hoffs, Paci and Lorenz, and these men obtained the Pathological study of the condition and developed the manipulative method.

ETIOLOGY.—The cause of this condition, which is found, according to Ledamaiy, occurs only in the human fetus, is due to mechanical pressure. The thighs being flexed and adducted in utero tends to make pressure on the posterior wall of the acetabulum, causing it to become ovolid instead of round, also a certain degree of twist in the neck of the femur takes place, permitting the neck of the femur to ride upon the anterior margin of the acetabulum producing a leverage

which tends to throw the head completely out of the socket.

PATHOLOGY.—The bony changes are a shaallow ovoid acetabulum, a twist in the head of the femur, the head of the femur being flattened out. The capsular ligament is thickened and elongated. The ligamentum teres often disappear. The adductor muscles are shortened.

SYMPTOMS.—Recognized when child begins to walk with the characteristic waddle gait and lordosis of the spine. In double congenital dislocations the symptoms are more prominent.

The diagnosis is easy. The history, the gait, the looseness of the head of the femur, with a radiogram, makes the diagnosis complete.

TREATMENT.—In the author's experience about seventy-five per cent of the cases under eight years of age, can be reduced by manipulation, and a perfect anatomical and functional result obtained. In some five per cent operative reduction was necessary.. The chief hindrance in these was due to thickened and contracted condition of the capsule. The author follows a modified Lorenz method, using as little force as necessary to replace the head. The limb is put up in moderate abduction, and inward rotation, avoiding the difficulty of overcoming the subsequent extreme rotation of the limb. The child is put upon it's feet, as soon as possible, and in two to three months the limb brought down parallel with it's fellow. The author has been able to anatomically cure seventy-five per cent of his cases, to get a good functional result in ten per cent more due to anterior transposition. Some five per cent have been subjected to operative interference with good results. The remaining have been un-improved or have resulted in ankylosis. C. C. CHATTERTON.

CASE OF ORCHITIS AND DEAFNESS: Dan McKenzie (Proceedings of the Royal Society of Medicine, Vol. XI, No. 9), reports a case of unusual interest. A male, age 62, consulted him giving the following history: A few weeks previously he had an attack of "influenza," temperature 104 degrees Fahrenheit, with general muscular aching. A week afterward he had recovered from this attack and returned to business. One morning he discovered that he had become completely deaf in one ear. He had no previous ear trouble of any sort nor were there symptoms other than deafness either before or after the attack.

Clinical findings: Hearing in right ear completely abolished, left ear normal; tuning fork on right mastoid referred to left ear. Noise apparatus applied to left ear proved to total deafness of right ear; spontaneous nystagmus when looking to either side but within physiological limits. Caloric reaction normal.

Upon cross-examination, the patient states that during his attack of influenza his testes became enlarged one after the other without any previous complaint to account for it. It then occured to the author that his so-called "influenza" was an attack of mumps that had spared the salivary glands but attacked the testes.

The deafness in mumps is not infrequently unilateral and its onset, though sudden, is unaccompanied by vertigo. The nature and situation of the lesion in deafness as a result of mumps is as yet unknown, but it would appear that the virus selects the acoustic and spares the vestibular apparatus.

It is important, therefore, in cases of unilateral or bilateral deafness arising suddenly to ascertain if there is a previous history of mumps or orchitis, the latter arising as a complication of mumps or from no ascertainable cause. PAUL D. BERRISFORD.

MAGNESIUM SULPHATE SOLUTIONS IN THE TREATMENT OF SPASTIC CONTRACTURES OF THE RECTUM AND SIGMOID COLON: Horace W. Soper, M. D. (Am. Jour. Med. Sc. Aug. 1918). maintains that muscular contractions in the rectum and lower colon as revealed by the sigmoidscope are pathologic in character and are etiologic factors in many cases of chronic obstinate constipation.

He quotes the theory as expounded by Meltzer that intestinal peristalsis results from the contraction of the proximal portion and relaxation of the distal portion of a section of intestine and that the action of Mg. So4 is due to its inhibitory action on the peristaltic movements of the bowel.

The purgative action of Mg. SO4 when given by mouth is due to its being converted into Sodium Sulphate and Magnesium Carbonate, substances which increase the irritability of the exciting or contractile phase of the bowel, while the remaining unconverted Mg. SO4 acts by increasing the inhibiting or relaxing phase of peristalsis.

From the foregoing he deduces that a condition of hypertonus or contracture in any portion of the bowel is due to a disturbance of the law of the intestine and the persistence of the contractile phase.

He mentions some 2,000 cases of obstinate constipation which have come under his care during the past 10 years, more than half of which were of the spastic type.

Quite a large number of these latter he has treated during the past year by means of Mg. SO4 local applications with the restoration of normal colon function in many cases.

He does not claim permanency for the method because the time is too short, but thinks the plan a hopeful one.

In making a diagnosis of spastic colon or contractures, he puts main reliance on the proctosigmoidoscope, the history of fragmentary feces and the palpation of a small contracted tender descending colon.

The X-ray gives misleading pictures and is therefore unreliable.

His method is to use a saturated solution of Mg. SO4 and make local applications with a cotton swab through the sigmoidoscope with the patient in the knee chest position.

The local treatments are repeated every second day, the intervals lengthened as the condition improves.

Cases require 10-30 treatments. No cathartics or enemata are allowed. When the contracture lies beyond the reach of the sigmoidoscope, a small catheter is inserted and two ounces of the Mg. SO4 solution is run in with the patient kept in the knee chest position for several minutes.

The method is also of often dramatic help in the relief of post operative abdominal distension and gas pains. Here three ounces saturated solution Mg. SO4 is run into the bowel by means of the rectal tube passed up 4-5 inches, hips elevated, and held as long as possible. This may be repeated daily or several times a day.

Large quantities of flatus are expelled and defecation often follows without pain or rectal tenesmus. The enema is usually retained for but five minutes. Occasionally however, it may be held for twenty-four hours, no harm results as no toxic effects have been noted (Meltzer warns against giving too large a dose as toxic effects have been observed particularly in animal experimentation.)

No evidence of increased peristalsis occurs. The Mg. SO4 solution evidently merely relaxes the contracted rectum and lower sigmoid and allows the retained gases and fecal matter to pass out of the distended colon.

CHARLES N. HENSEL.

INDICATIONS FOR OPERATION IN GLAUCOMA: William Campbell Posey (Pennsylvania Med. Jour., Vol. XXI, No. 5) agrees as must most ophthalmologists that the profession at large are somewhat divided in considering the treatment of glaucoma, due no doubt, to the many operations advocated for the relief or cure of the disease.

His conclusions formulated in 1915 are still held and the indications for operation in glaucoma are:

1. In all cases of acute and subacute glaucoma and in all chronic cases or on the manifestation of any inflamatory glaucomatous symptoms.

2. In all cases of chronic glaucoma in which there is doubt of the patients' co-operation in the persistence of the miotic treatment throughout the remainder of life. This includes practically all hospital cases and such private patients as may be of a weak and vacillating disposition.

3. In all patients with chronic glaucoma who reside at such distance from centres where proper ophthalmic care may be obtained that they are unable to report at sufficiently frequent intervals for the supervision necessary for the proper and safe carrying out of the miotic treatment or for operation in the event that inflammatory symptoms arise.

4. In chronic cases where the patients are under 55 years of age when the field of vision and central vision are good, an operation on the most affected eye is advised, miotics being employed in both the operated and unoperated eye for the remainder of life. Operation on the second eye should follow if subsequent observation shows that vision is maintained better in the operated than the unoperated eye.

5. In all cases of chronic glaucoma without regard to age or the development of the disease, in which miotics have been given a faithful trial for at least six weeks or two months, as evidenced by the constant maintenance of pupillary contraction to almost pinpoint size and in which vision and the field of vision show progressive deterioration.

In cases not included under the above five headings miotics should be employed with great zealousness and persistence four times a day and if treatment is carried out along the lines indicated the gloomy prognosis for sight so often rendered in cases of chronic glaucoma is unnecessary and unwarranted.

Cyclodialysis and trephining should be performed in all cases in which operation is demanded if there be hemorrhagic tendency or the field of vision is very much reduced.

Iridectomy is the procedure of choice in all other cases. From Posey's own experience and that of others, trephining is usually a more dangerous procedure than iridectomy on account of the opacification of the lens that follows in not a small proportion of cases either immediately or remotely after the operation, and the danger of accidental infections in the subsequent course of the case.

That trephining has the power to lower tension no one can deny, but that it is the most potent known operative measure in securing and retaining sight, conservative observation of a large number of cases will alone prove.

GEORGE C. DITTMAN.

A BACTERIAL TOXIN AS THE CAUSE OF RETINAL HEMORRHAGE: F. Park Lewis (Jour. A. M. A., Vol. 70, No. 24)cites cases of retinal hemorrhage in which the etiological factors are conclusively proven to be of bacterial origin, the invading organism being streptococcus hemolyticus in all cases. The removal of the infection occasioned complete cessation of hemorrhage. In every case of hemorrhage of the eyeball some form of focal infection had been found.

The author states that retinal hemorrhages are not dependent on blood pressure. They may be associated with, but not directly caused by, arteriosclerosis, albuminuria, diabetes, or other diseases of metabolism, or focal infections. The organism most commonly present is the streptococcus and frequently found is the streptococcus hemolyticus. The hemorrhage produced is not the result of force from behind but is due to softening of tissues of the capillary or arterial walls by local action of this toxin or lysis.

This conception has not been heretofore recognized and the reason for the conclusions reached will be briefly given. That our fundamental knowledge of the cause of retinal hemorrhage is still exceedingly indefinite is shown in a review of our most recent literature.

The author quoting other sources states: "it is a symptomatic condition which must be evaluated according to concomitant factors." It is vitally important that the dependent factors for the change in vascular tissue

be known, for upon its understanding is based our whole conception of the actual etiology, and therefore, prognosis and treatment.

It is here urged that that which actually occurs is the absorption into the blood of a soluble protein poison, usually given off from a focal infection, which has a solvent effect on the intercellular cement substance of the cell wall, and that the hemorrhage is not due to alteration of the blood pressure but to local lysis in the wall itself.

An added importance to the subject lies in our understanding not alone of hemorrhage within the eye, but also hemorrhage elsewhere in the body.

If, as would seem, this is what actually occurs, the recognition of this newer pathology will enable us to seek the origin of the focal nidus producing this tragic disaster instead of wasting valuable time in eliminatives that can have no direct effect whatsoever on the disease.

GEORGE DITTMAN.

THE MEASLES PROBLEM: Charles Herrman, M. D. (Archives of Pediatrics, Dec., 1917) finds that with the possible exception of whooping cough and epidemic catarrh, no other communicable disease of childhood is more difficult to control than measles. The notification of the Department of Health is important for statistical purposes, and together with the placarding of the apartment in which the case occurs, is valuable in inducing the other tenants and neighbors to keep their children away from all the children of the family in which measles occurs. The difficulty is that the primary case has already infected them before it is recognized.

Most of the statistics of morbidity and mortality from measles are unreliable. Depending on the regulations of the local Department of Health, from 25 to 50 per cent of all cases are not reported. Many patients are never seen by a physician. But the great difficulty in the prophylaxis still lies in the fact that the disease is highly and most communicable before the eruption appears, that is, at a time when in most instances its presence is not even suspected. Prophylactic measures which begin with the appearance of the eruption are of no value.

All children who have had an attack of measles, and have been under the care of a physician, should receive a certificate. This should be kept, so that if a case of measles occurs later in the same family, the child need not be excluded from school; and the susceptibles and non-susceptibles will be known. When a case of measles occurs in one of the classrooms, all the susceptible children should be examined regularly. The regular weighing of all the children, in order to detect the loss in weight during the latter part of the period of incubation is difficult to carry out in the public schools, and is unreliable. If it were possible to take the temperature of all susceptibles several times a day, it would be of distinct value in detecting the initial rise, and isolating the patients early; but this is hardly possible in our public schools. Some years ago the writer suggested a method which he believes is more practical, namely, the daily examination of the mouths of all susceptibles, in those classes in which a case of measles has occurred, especial attention being given from the tenth day after the primary case developed, at which time the first symptoms will show themselves in the secondary cases.

It is a well recognized fact that the mortality from measles is much greater in hospitals and in other institutions than in private practice. The chief disadvantages of hospital treatment are, the danger of cross infection, and the lack of individual care. Only in rare and exceptional cases is it impossible to keep the child at home. Those who advocate the hospitalization of the majority of cases of measles, in institutions that are properly constructed for the purpose, and are able to give the most modern and approved care, forget the expense which this would entail. Even in the poorest surroundings the danger of cross infection is avoided.

After years of observation of the spread of measles, the writer is convinced that a real control, and a distinct reduction in morbidity and mortality, is impossible with our present prophylactic measures. A true control can only be obtained by the immunization of infants against the disease.

The author has now immunized 122 infants, and in not a single case was there any unfavorable effect. It goes without saying that the proper precautions must be observed. In conclusion, he again emphasizes the fact, that the child with measles should not be sent to the hospital.

C. E. SMITH, JR.

SENSITIZED VACCINES IN THE PROPHYLAXIS AND TREATMENT OF INFECTIONS: Russell L. Cecil, M. D., Major, U. S. M. R. C. (The Amer. Jour. of the Med. Sci., June, 1918) points out that a sensitized vaccine is a suspension of bacteria which has been previously treated with an homologous serum. The administration of sensitized vaccine has sometimes been referred to as sero-vaccination or "combined active-passive immunization." Both of these terms are misleading: the former because the serum is removed by washing the bacteria before they are injected, the latter for the reason that the immunity produced is probably entirely active. Whatever antibody is present in the vaccine is firmly attached to the bacteria, and whatever value sensitization of a vaccine possesses probably inheres from the

direct influence of the antibody on the bacteria to which it is attached.

A great deal has been written during the past decade about vaccines, but in spite of this vaccine therapy still remains an empirical procedure. It has been repeatedly demonstrated that the injection of killed bacteria into a healthy animal calls forth the manufacture of various antibodies and that a state of immunity is thereby produced. The exact effect, however, of vaccination in the case of an infected animal or human being is not known, for the reason that no method has been worked out for studying the effect of vaccine in experimentally infected individuals. The expectations of Wright that the opsonic index would prove a reliable guide in the administration of vaccine have not been realized. At the present time the only guide is the condition of the patient. We do know that in a considerable number of cases the use of vaccine is followed by the improvement or recovery of the patient. The same may be said of sensitized vaccines. It has been maintained by Besredka, Barbat and Meyer, Gay and Claypole, and others that vaccination with sensitized typhoid bacilli produces a high grade of immunity, higher than that following the injection of non-sensitized bacilli. Furthermore, it has been demonstrated by Barbat and Meyer that sensitized vaccines excite a very active production of bacteriotropic bodies, while the agglutinins, bacteriolysins and complement-fixation bodies are stimulated very slightly if at all. On the other hand, the immunity attained by injections of non-sensitized typhoid bacilli is actively bacteriolytic and only slightly bacteriotropic in character. The explanation offered by Garbat and Meyer for these differences was that by means of sensitization the typhoid bacilli and their immune bodies (amboceptors) are combined so that when injected into an animal they are ready for immediate attack and destruction by the complement; whereas with the injection of non-sensitized bacteria the tissue cells must first elaborate the various antibodies before the bacteria can be sensitized (in vivo) and broken up. Garbat suggests that if the injection of ordinary vaccine causes a bacteriolytic reaction and the administration of sensitized vaccine a bacteriotropic response it might be advisable in prophylactic vaccination to inoculate individuals with both kinds.

By this same reasoning one can account for the lesser toxicity of sensitized vaccine, on the ground that sensitization renders the bacteria more susceptible to complement, and, accordingly, more capable of rapid disintegration into harmless products. It is, of course, important that sensitization of the bacteria should be complete. In order to make certain of this an excess quantity of a serum of high titer should be used and plenty of time allowed for the firm binding of bacteria with antibody. If there is not time to immunize rabbits, some of the patient's blood may be withdrawn and the vaccine sensitized with the patient's own serum.

The question whether one should use a sensitized vaccine in the living form is an important one. With the streptococcus viridans, pneumococcus and gonococcus the living sensitized virus (in the writer's experience) is harmless when injected subcutaneously. With the staphylococcus aureus the writer should be rather afraid of furuncles in spite of the work of Broughton-Alcock. With the typhoid bacillus one should not forget the recent work of Nichols. Nichols has shown that Metchnikoff and Besredka's living sensitized vaccine produces a typhoid cholecystitis when injected directly into the gall-bladder of rabbits and is therefore infectious.

The increased time and labor necessary for the preparation of a sensitized vaccine naturally leads one to ask the question: Is the superiority of sensitized vaccine sufficiently marked to justify such an expenditure? In the majority of cases, no.

In the case of the typhoid bacillus the sensitized living vaccine of Besredka is infectious and is capable of producing cholecystitis in rabbits. The local reaction produced by the sensitized vaccine is slightly milder than that caused by the non-sensitized vaccine, but the difference, after all, is inconsiderable. The figures of Nichols show that in practical use on patients there is very little difference in the protective power of the two. At the present time, therefore, we are hardly justified in giving up a well-tried agent like the non-sensitized typhoid vaccine and substituting a sensitized vaccine, the efficacy of which has not yet been thoroughly established.

The writer's therapeutic results with sensitized gonococcus vaccine were not so brilliant as to impress him with their great superiority to the non-sensitized vaccine. His limited experience with sensitized streptococcus and staphylococcus vaccine does not allow of conclusions, but he should feel about these as about the gonococcus—that if sensitized vaccine was ever indicated it would be only after ordinary vaccine had failed.

The writer entertains skepticism about sensitized tuberculin. Granted that the so-called immune serum could be produced (a rather generous concession) there would probably be considerable deterioration in the imported product, no doubt several months old, when purchased in the market. Of course the latter difficulty could be overcome by substituting a domestic preparation. This same product, "S. B. E.," has been used with tolerable success by A. C. Burnham. As with other forms of tuberculin the results are not so good in pulmonary as in "surgical" tuberculosis.

It has been shown by numerous investigators that a vaccine sensitized with an homologous serum produces less local and constitutional disturbance when

injected subcutaneously than does a non-sensitized vaccine. Even living virulent organisms when properly sensitized can be injected subcutaneously without serious consequences.

It has been maintained by some that sensitized bacteria, either living or dead, produce a more rapid and efficient immunity than non-sensitized bacteria do. This question, however, cannot be considered settled as yet.

Sensitized vaccines have been extensively used for prophylactic and therapeutic purposes.

The author has employed sensitized vaccines in a series of 47 cases, which include 20 cases of prophylactic vaccination against typhoid fever, and 27 cases of therapeutic vaccination against gonococcus, streptococcus, staphylococcus aureus and tuberculous infections. The sensitized typhoid vaccine produces a somewhat milder reaction than ordinary typhoid vaccine, and probably gives just as high an immunity. At the present time, however, the evidence for its superiority is not sufficient to justify the substitution of sensitized for ordinary vaccine in practice.

In the various infections treated with sensitized vaccines the results were, as a rule, no better than would have been expected with ordinary vaccine. It happened that in a few instances recovery followed the administration of sensitized vaccine after treatment with ordinary vaccine had failed. This may have been due to the fact that larger doses could be employed without untoward symptoms.

The chief objection to the general use of sensitized vaccines is the increased labor and time necessary for their preparation.

At the present time it would seem desirable to limit their use to the treatment of infections in which there is hypersensitiveness to ordinary vaccines or in which the latter have proved inefficacious.

E. T. F. RICHARDS.

BOOK REVIEWS

INTRODUCTION TO NEUROLOGY. (By C. Judson Herrick, Ph. D., Professor of Neurology in the University of Chicago. Second Edition. Reset. 12mo of 394 pages. 140 illustrations. Published by W. B. Saunders Company, Philadelphia and London, 1918. Price, $2.00.)

This book is a thoroughly, up-to-date introduction to Neurology. The materials presented are arranged in three groups: Chapters I to VII discuss the more general neurological topics; Chapters VIII to XVIII comprise a brief account of the form of the nervous system and the functional significance of its chief subdivisions in general, explaining the more important functional systems. The third division is devoted to the cerebral cortex and its functions.

Special care has been taken in preparing the index, and with it is combined a brief glossary of technical terms.

The book can be highly recommended to the student the general practitioner, and the specialist. C. M. DOVRE.

PRINCIPLES AND PRACTICE OF OBSTETRICS. (By Joseph B. DeLee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School. Third Edition, thoroughly revised. Published by W. B. Saunders Company, Philadelphia and London, 1918. Price, $8.50)

This is a volume of 1089 pages with 949 illustrations, 187 of which are in colors.

The general plan, outline and scope of this edition are not unlike that of the former editions, but each subject and chapter has been brought up to date in regard to theory, knowledge and treatment.

All the illustrations are excellent and the new ones are illucidating beyond the power of words.

Any student or practitioner wishing a good, reliable and up-to-date treatise on the general subject of obstetrics cannot do better than to provide himself with this excellent book. ALBERT G. SCHULZE.

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